BLM LIBRARY
88001330

Natural Resources of
NEW MEXICO

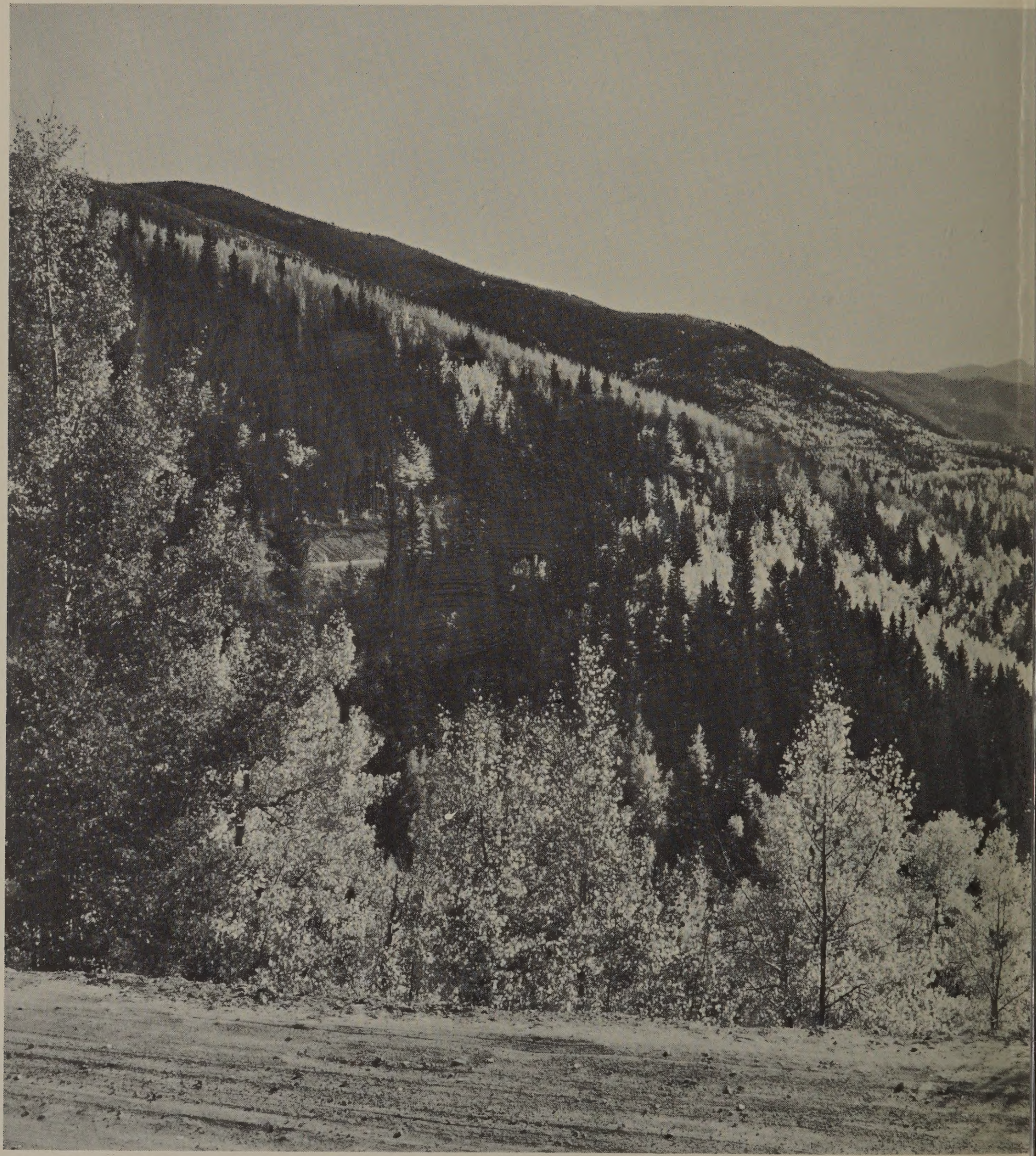
Prepared by the - United States Department of the Interior - Stewart L. Udall, Secretary

HC
107
.N6
I57

Bureau of Land Management
Library
Denver Service Center

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

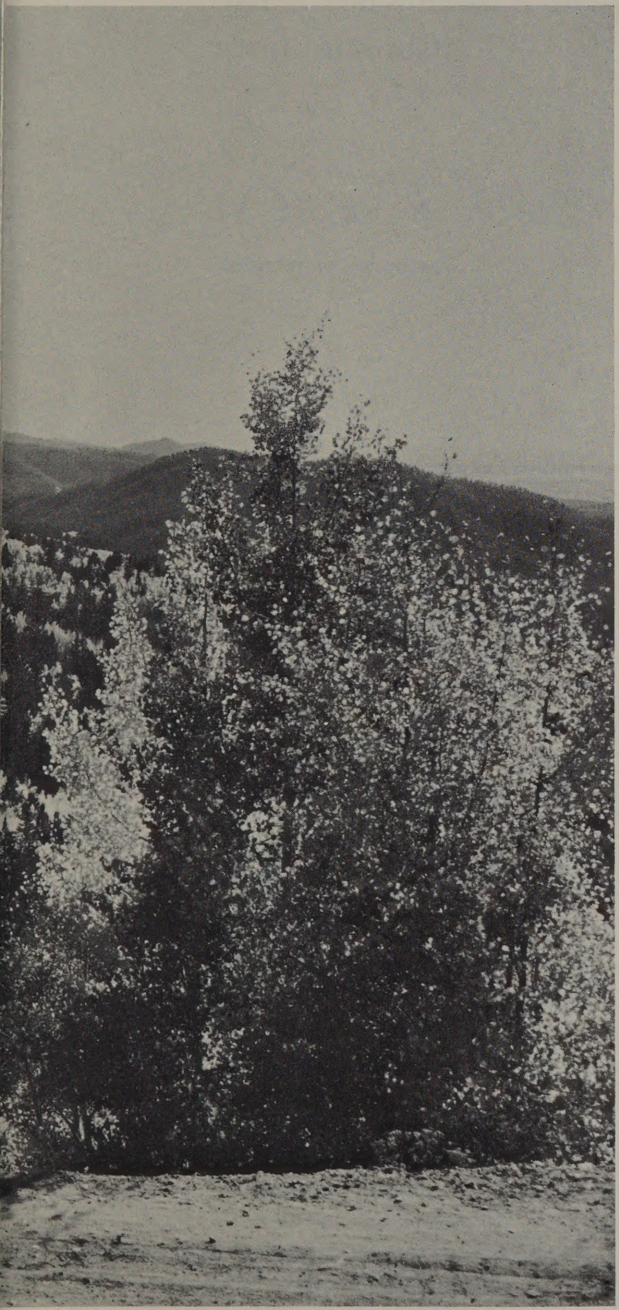
(Cover) This road, used since the early 1600's, is one of Santa Fe's oldest thoroughfares. The Spanish influence can be seen in the structures nearby.



New Mexico has thousands of square miles of beautiful forests. The Sandia Mountains rise in the distance behind Santa Fe National Forest.

#3546030 ID: 88001330

HC
107
.N6
I57



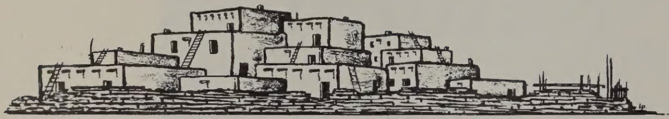
Natural Resources of New Mexico

"Land of Enchantment"

Bureau of Land Management
Library
Denver Service Center

BUREAU OF LAND MANAGEMENT LIBRARY
Denver, Colorado
88001330

Published by • The United States Department of the Interior • Office of the Secretary • Office of Information



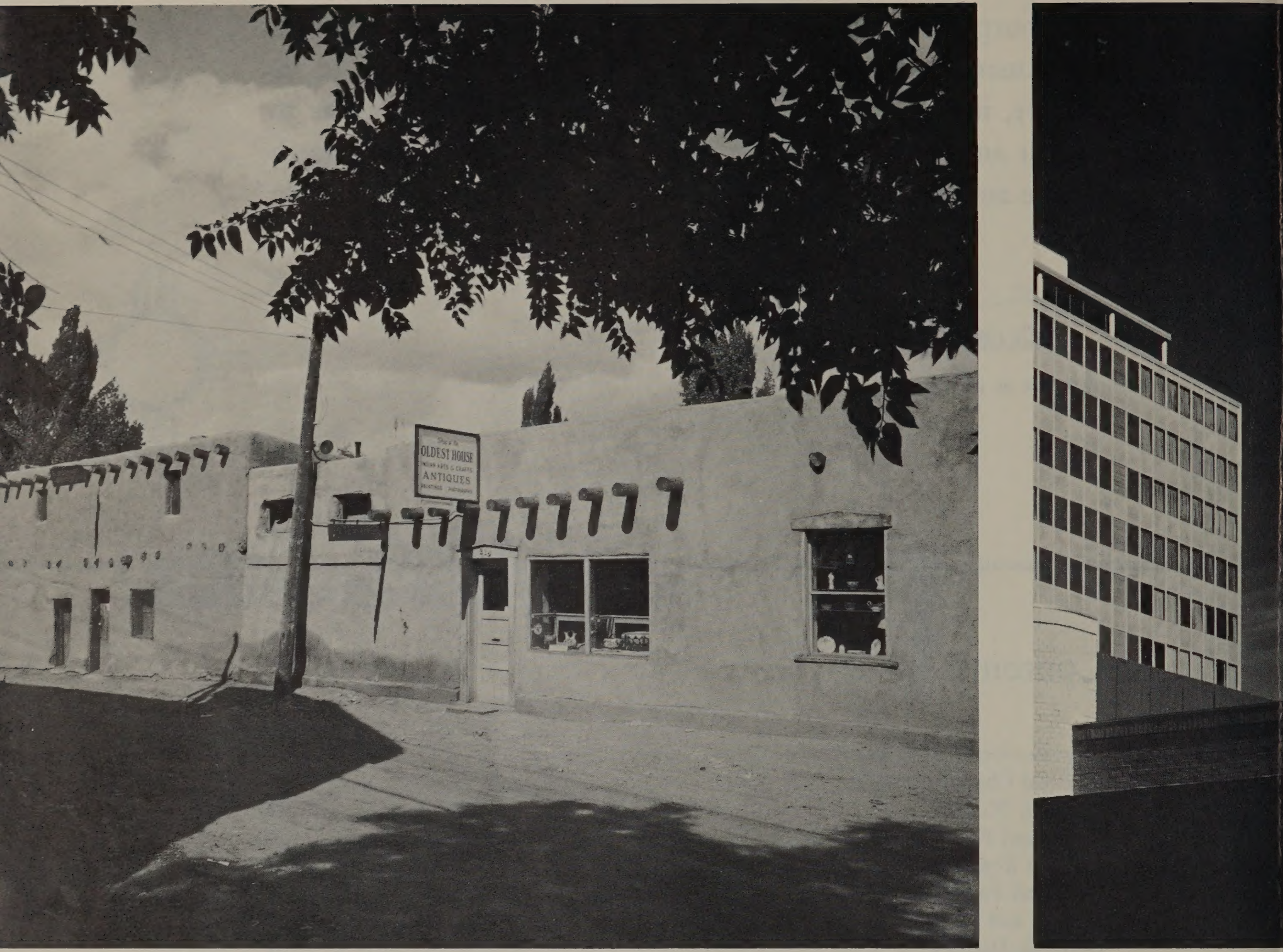
The purpose of this booklet is to bring a new awareness to the American people of our rich natural resource heritage, its history, its present, and its future. To know our land is to love it and cherish it and protect it from the ravages of both nature and man.

Stewart L Udall

SECRETARY OF THE INTERIOR

Contents

	Page
Introduction and History	4
Physical Characteristics	9
Fish and Wildlife	12
Water and Power	16
Mineral Resources	23
Land and Forests	26
Indians and Their Resources	30
Geologic History	34
Parks and Recreation	36
Programs of Federal Natural Resource Agencies	47
U.S. Army Corps of Engineers	48
Fish and Wildlife Service	50
Forest Service	52
Geological Survey	54
Bureau of Indian Affairs	56
Bureau of Land Management	57
Bureau of Mines	59
National Park Service	61
Bureau of Outdoor Recreation	62
Bureau of Reclamation	63
Office of Saline Water	66
The Future	67

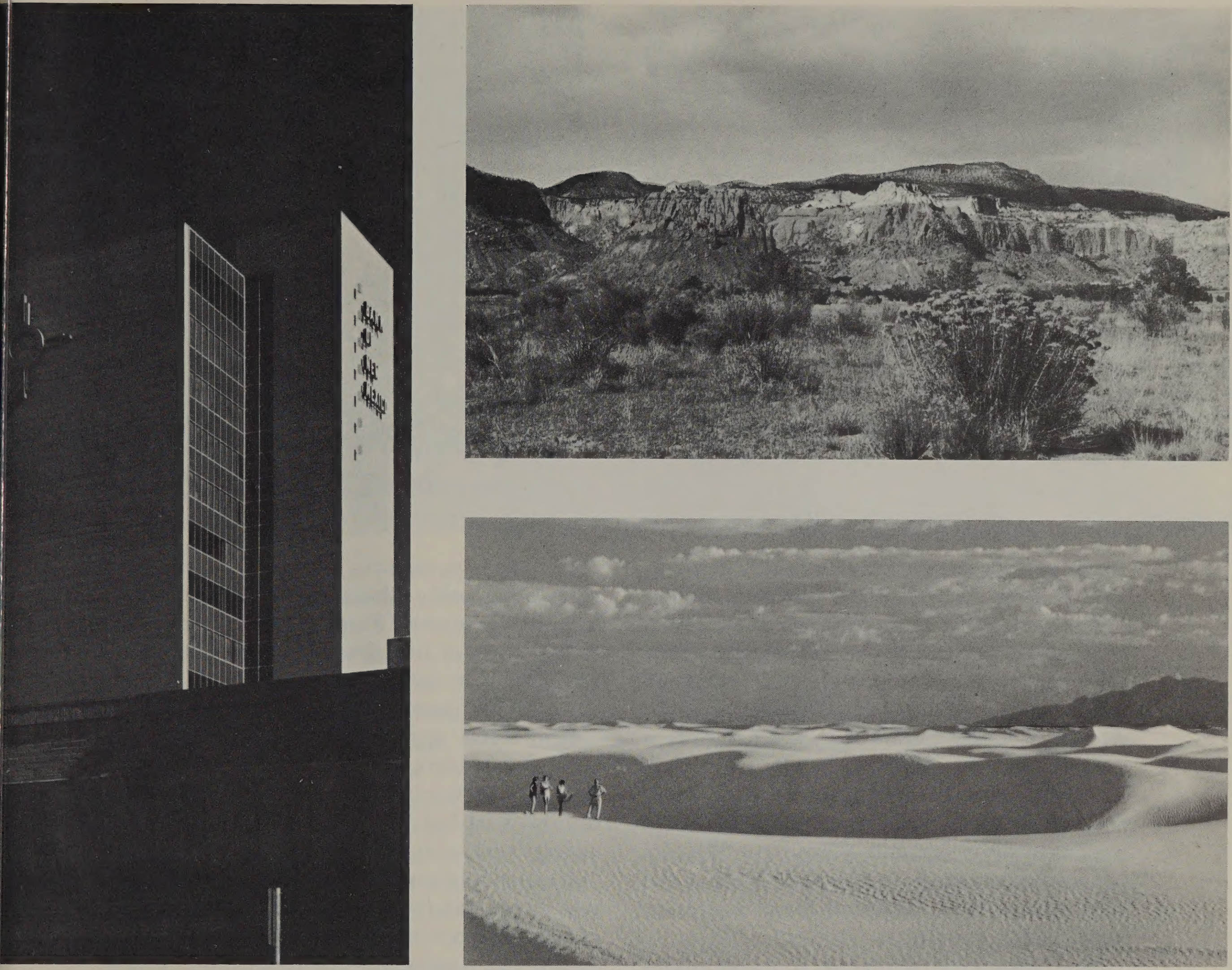


New Mexico combines old and new, familiar and exotic. The Nation's oldest house is at Santa Fe; modern

Introduction and History

New Mexico—where natural treasures far surpass the dreams of its early adventurers, where an ancient past looks over the shoulder of a growing and prosperous present—is the "Land of Enchantment."

Four hundred years of rich and varied history have produced modern New Mexico with its blend of three cultures—Indian, Spanish, and Anglo-American. In 1540, Coronado came out of Mexico in search of the fabled Seven Cities of Cibola where streets and walls were said to be of gold. The conquistadors never found their

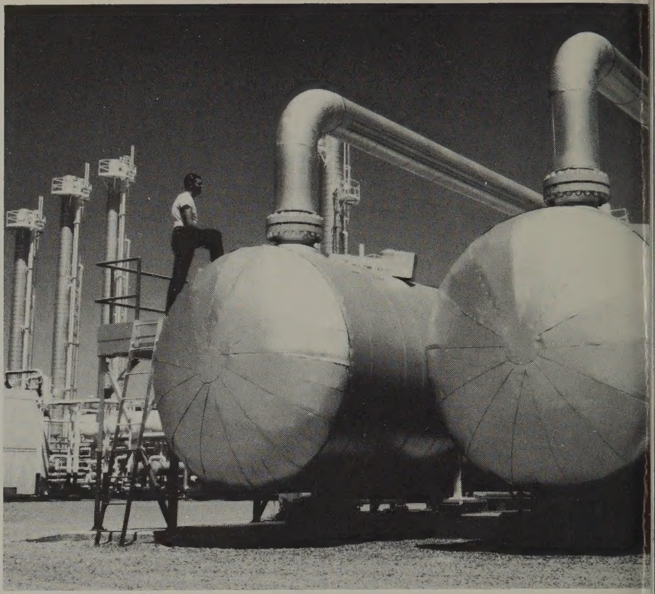


office buildings at Albuquerque reach for the sun; awesome White Sands desert sets a mood unlike the plains and mesas.

golden cities nor did they realize the tremendous wealth that lay beneath their feet.

After the Spaniards came other explorers. Mountain men, soldiers, prospectors, and cowboys risked their lives and fortunes to open this country for the westward growth of the Nation. Across the dusty prairies, long lines of wagon trains marked trails to the western terminus at Santa Fe, oldest seat of government in the Nation, founded by the Spaniards in 1610. First a possession of Spain and then a Province of Mexico, New Mexico was organized as a U.S. territory in 1850, gaining admittance as a State in 1912.

Today, New Mexico is a land of contrasts—geologically, socially, and culturally. Some Indians still carry on the religious ceremonies of their ancestors, while descendants of Spanish and Mexican extraction swirl rhythmically to the strains of long-remembered folk songs on festive occasions. To the beat of the Indian tom-tom and the gay rhythms of the Spanish dance, there is added the stream of the jet transport and the roar of the transcontinental stream-



lined train connecting the old with the new.

With over 50,000 Indians, the third largest Indian population in the Nation, New Mexico contains a portion of the largest Indian reservation—the Navajo Reservation with nearly 16 million acres in Arizona, New Mexico, and Utah. Apache, Ute, and Pueblo Indians inhabit other reservations in the State.

Sparsely settled in comparison with other States, New Mexico has an average of about six persons to the square mile. But, since 1910, its population has nearly tripled to 951,023 in the 1960 census. Fifth largest of States in area, it ranks 32nd in population.

New Mexico is a land where, in a single day's travel, one can go from level prairies to high mountains cut by deep canyons with great fertile valleys checkerboarded with fields and orchards. Suddenly and without forewarning, at almost any point in the State, one may step from modern America into old Spain, or into Indian territory, within the space of a few miles; just as one may pass from an almost tropic climate into a frigid one, due to the many abrupt transitions from plain to plateau, from mesa to mountain.

New Mexico is a land of surpassing beauty and attraction. Space is its keynote—vast, limitless stretches of plain, desert, buttes, and mesas. Its climate is almost universally benevolent with clear air, brilliant sunshine, and, in the plateau regions, brisk winters of dry, stimulating cold. The sun-drenched land has inspired the name "Sunshine State," and the exotic charm of its cultures, its scenic marvels, and abundant natural resources make it the "Land of Enchantment."

Few States approach New Mexico in the possession of scenic beauties and spots of historic interest. Among its wonders are the world-famous Carlsbad Caverns with the largest underground room in the world.

Thousands of square miles of unspoiled mountain forests and facilities for an endless variety of outdoor sports make New Mexico one of our Nation's most attractive recreation areas. There is abundant wildlife for the hunter. Big game also includes antelope, mule deer, elk and black bear and there is a wide variety of birds and fowl.

Cold mountain streams and hundreds of miles of scenic canyons combine with high lakes and warm-water reservoirs to offer a sports mecca for the fishermen. Long mountain trails across forested slopes invite the horseback rider, the camper, and the hiker. Breathtaking mountain views, multicolored rocks, and villages with sun-flooded streets and old adobe houses lure the visitor and account for the millions of dollars which tourist business brings annually to New Mexico. Excellent skiing is found in the mountain areas.

(Left) Ancient crafts and modern industry coexist as an Indian woman turns clay into pottery and a gas refinery turns a natural resource into useful products.

(Right) Pecans are an important crop in the Mesilla Valley of southern New Mexico. This orchard covers over 4,000 acres.

Rich natural resources—forests, rangelands, minerals—also make New Mexico an economic "Land of Enchantment." A sizable portion of the total land area is used in farming and a large percent of the population is engaged in agriculture. But the agricultural picture is changing as the State becomes more industrialized. For example, New Mexico has a a large stake in the atomic age, as Government and private corporations maintain extensive nuclear-related establishments in the State. Cotton is the most important single source of farm income, with grains, vegetables, and fruit also having large production. Agriculture is made possible by means of irrigation. Centuries ago, before Spaniards made their first settlement, Indians were irrigating their crops.

New Mexico is the birthplace of the Nation's livestock industry and cattle and sheep are still a vital part of its economy. Vast grazing areas cover the State.

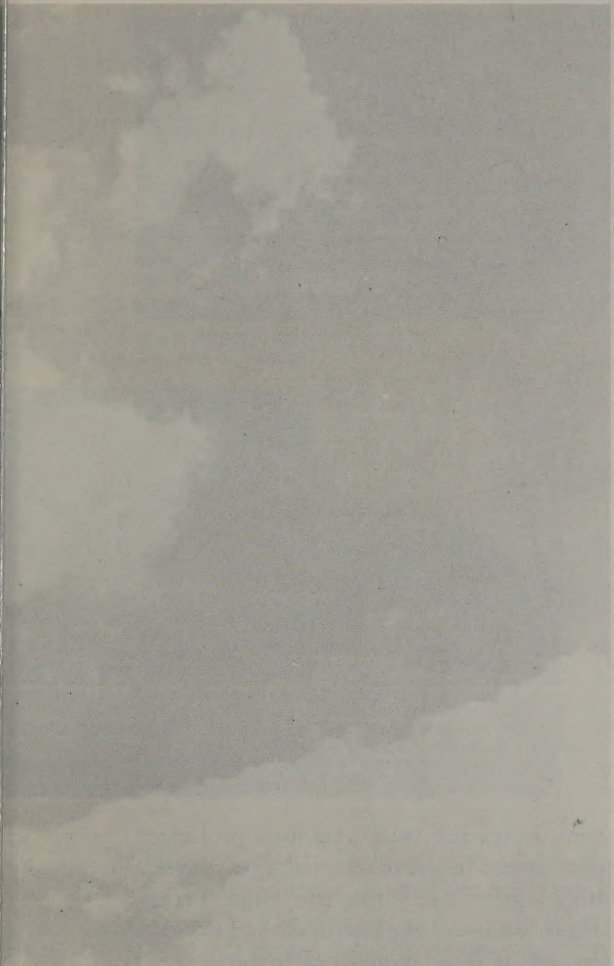
Minerals are another of the State's major economic attractions and resources. New Mexico ranks seventh in the total value of its mineral output. The most valuable of its mineral products are petroleum and natural gas and New Mexico leads the Nation in production of uranium. Enough coal lies buried within its borders to supply the Nation for thousands of years.

Among New Mexico's growing industries, oil refining is the most important. Lumbering and the manufacturing of wood products also rank high. The future of New Mexico from a commercial and industrial point of view is highly promising, but right now the State's largest growing enterprise is the entertainment of thousands of visitors.

Of vital importance to New Mexico's future development are its water resources, needed for irrigation, power, recreation, and municipal and industrial purposes. Although its land area is large, New Mexico has a natural water surface area of only 155 square miles. Its rivers are the Rio Grande, Canadian, Cimarron, Pecos, San Juan, and Gila. Conservation of water resources is a matter of utmost urgency, because the land is largely composed of vast arid and semiarid regions which require irrigation for abundant productivity. Through the years, Federal natural resource agencies have played an active role in resource programs in New Mexico and are proud of the contribution they have made to the State's growth and progress.

Major cities in New Mexico include Albuquerque, Santa Fe (capital), Roswell, Carlsbad, and Clovis. Principal universities in the State are the University of New Mexico in Albuquerque, New Mexico State University, the New Mexico Highlands University in Las Vegas, the New Mexico School of Mines at Socorro, and Eastern New Mexico University at Portales.

Physical Characteristics



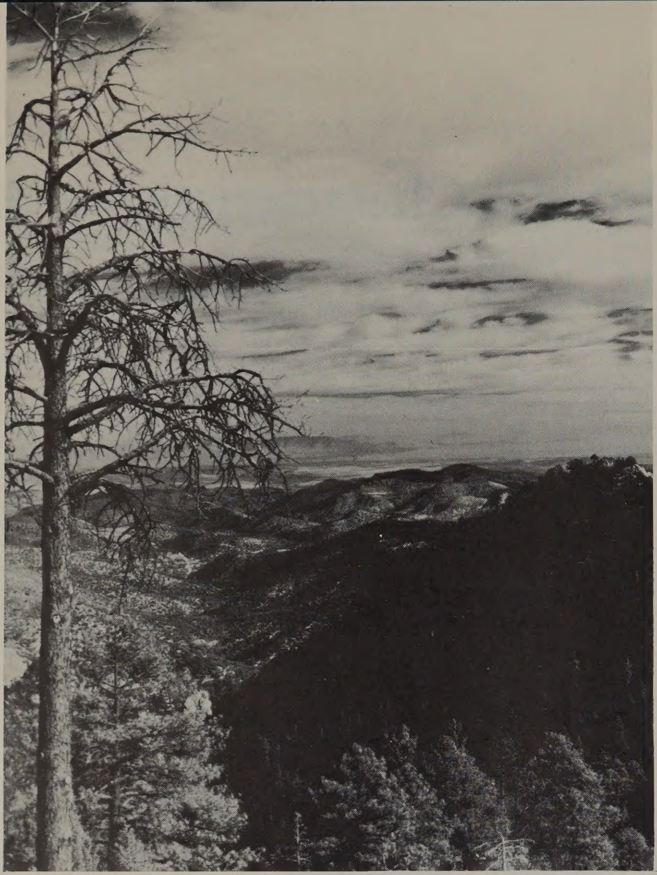
New Mexico has a land area of 122,634 square miles of extraordinarily varied terrain and, consequently, varied climate, flora, and geography.

It is bounded on the west by Arizona and on the north by Colorado; at the junction of these boundaries lie the "Four Corners" of these States, New Mexico, and Utah. It is bounded for a few miles of its eastern border by the Panhandle of Oklahoma and southward by Texas, which also forms the eastern half of its southern border, the remainder being the international boundary with Mexico.

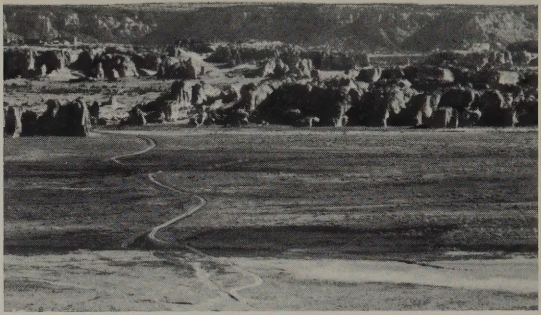
Two great ranges of the Southern Rocky Mountains, the San Juan and Sangre de Cristo Mountains, enter the State from the north and their meridional trend is continued to the southern border of the State by a series of ranges of irregularly diminishing altitude. This belt of ranges, in places nearly 100 miles wide, roughly divides the State from north to south. The State thus lies across the backbone of the continent and it is crossed from its southern boundary to its northern one by the Continental Divide.

The highest altitudes in New Mexico are in the Sangre de Cristo Mountains. Wheeler Peak reaches a height of 13,160 feet above sea level and North Truchas Peak, South Truchas Peak, and several others are only a few feet lower. The lowest altitude is at Red Bluff

Shiprock, towering 1,640 feet above the plains, is a spectacular sight in New Mexico's Navajo Indian country.



One of the most majestic mountain views is from Emory Pass in the southwestern part of the State.



where the Pecos River leaves the southern border at a height of 2,876 feet above the sea. The total relief within the State thus exceeds 10,000 feet. The average altitude is more than a mile above sea level.

The two largest rivers of the State enter it from Colorado, the San Juan crossing the northwestern corner to enter the Colorado River, and the Rio Grande bisecting the State from north to south. The Gila River, largest in the southwestern part of the State, flows about 100 miles southwestward into Arizona, ultimately draining into the Colorado River. The largest native-born stream of New Mexico, the Pecos River, heads in the southern Sangre de Cristo Mountains, from where it pursues an irregular course nearly 150 miles southeastward and thence more than 150 miles southward to the Texas border.

The northeastern part of the State is drained eastward from the Sangre de Cristo Mountains by the Canadian River and its tributaries and by the Cimarron River near the State's northern boundary. These and other rivers of the State flow partly within narrow rugged canyons. Elsewhere, irrigation water, its flow prolonged by impoundment in great reservoirs, supports a flourishing agriculture. On the High Plains, in the Pecos Valley of the southeast and in other areas, irrigation from pumped or artesian wells drawing on stored ground water supports other thriving agricultural areas.

The northwestern part of the State lies within the Colorado Plateau province, a land of canyon-cut plateaus and plains at altitudes chiefly ranging from 5,000 to 8,000 feet above sea level. In the southern part of this province the surface is largely covered by extensive lava flows and volcanic deposits of varied sorts, standing at generally higher levels than terrain of the northwestern part of the State.

The southwestern and south-central parts of the State are included within the Basin and Range province, a region of isolated mountain ranges of various kinds of rocks separated by wide desert plains lying at altitudes of 4,000 to 5,000 feet.

The eastern third of the State falls within the High Plains province, in its easternmost part

(Left) These mesas appear today as they did to Coronado in 1540.

(Right) White Sands desert, covering 270 square miles, is a natural wonder and part of the State's scenic variety.

(Left) Rio Grande River bisects New Mexico from north to south.

consisting of nearly featureless plains sloping very gently eastward from about 6,000 feet above sea level in the western part to less than 4,000 feet at the eastern margin of the State. In the northeastern part of the State dissected lava- and sandstone-capped buttes stand above the general level and, in the western part of the High Plains province the broad valley of the Pecos River and its tributaries have cut generally below the level of the plains.

The climate of the State is generally arid to semiarid. Much of the rain falls in thunderstorms, erratically distributed from place to place, from month to month, and from year to year. Large parts of the State have a normal rainfall of less than 10 inches a year, although local areas receive much more. The higher areas have heavier precipitation. Snowfall measured in tens of feet blankets the the high mountains of the north-central part of the State in winter.

There is also a wide daily and annual range of temperature. Daytime temperatures of well over 100° are recorded in the lower areas of the southern part of the State in summer and temperatures below zero are recorded in the northern part of the State in winter. For most of the year and in virtually all parts of the State, the wide daily range in temperature and the abundance of sunshine produce an excellent climate.

Altitude, even more than latitude, is the controlling factor in determining floral zones as well as climate, and one may pass through several zones within a few miles from mountain meadow to desert basin. In vegetation, in climate and in terrain, New Mexico's charm is one of infinite variety.

The highest peaks are above timberline and the flora may be a meager subalpine one. Somewhat lower are stands of spruce and fir. Large areas of the State are covered by splendid stands of commercial ponderosa pine—a valued renewable resource. Somewhat lower areas in the northern part of the State are clad with piñon and cedar, and there are great areas of sagebrush plains. In the south, with its warmer, more arid climate, the cacti flora is that of the Mexican desert.

Fish and Wildlife

New Mexico is a haven for the hunter and fisherman and offers an abundant variety of game and fish.

The State's game and fish department reports that, regardless of location, most deer hunters are within rifle range of a mule deer and most scatter gun fans are within shotgun range of a mourning dove. Oddly enough, considering

Big game such as mountain lion, antelope and mule deer abound in New Mexico. Large numbers of ducks winter at the four national wildlife refuges. Controlled hunting maintains wildlife and waterfowl populations.

its limited precipitation and lack of free water, New Mexico has some of the best trout streams and lakes and warm-water fishing in the Southwest. The State's fish and game resources attract sportsmen by the hundreds of thousands, thus bolstering the State's economy by many millions of dollars annually.

New Mexico is a blessing for the big game hunter. The State has the third largest mule deer population, with an estimated average herd of some 200,000 head. Elk and antelope abound, and black and brown bear and the mountain lion can be hunted in the mountain areas. The Gila Forest in Grant, Catron, and Sierra Counties is the largest big game country.

Popular among the smaller game are scaled quail, Merriam's turkey, mourning dove, pheasants, mallards, green-winged teal, Abert squirrel, and several species of grouse. Merriam's turkey are plentiful in the higher wooded areas and are among the most prized trophies for hunters.

Through carefully controlled hunting, the game and fish department aims to maintain herds of mule deer, elk, antelope, and other game. To accomplish this, the department engages in surveys of game animal populations, numbers and condition, and of game range conditions; applied research; transplanting game; acquisition of land, and development of land for wildlife purposes; creating access to public land; and in improvement of regulations and education.

New Mexico hunters are seldom bothered by "no hunting" signs or trespass fees because of the 34 million-plus acres of public land located within the confines of the State. Of this total, approximately 9 million acres are administered by the U.S. Forest Service; 11 million acres are State trust lands recently opened to the hunting and fishing public; and approximately 100,000 acres are owned and managed by the State game and fish department. In addition, 14 million acres administered by the Bureau of Land Management greatly increase and enhance the hunting and fishing opportunities.

New Mexico is noted for its trout fishing. In the mountainous northern sections and in the southwestern mountains are hundreds of miles of clear, cold, trout water where one can catch Loch Leven, west-slope native, and cutthroat trout as well as brook and rainbow trout. Streams in the Jemez Mountains also offer excellent fishing. The Rainbow and Brown trout—the State's largest fishes, often weighing 15 pounds—are caught in the Rio Grande, which provides 100 miles of fishing from Enbudo to the Colorado State line.

Lake fishing offers crappie, sunfishes, largemouth black bass, catfishes and walleyes.

Most of the warm water fishing in New Mexico is provided by four large reservoirs. These reservoirs and their surface acreage at spillway level are Conchas Lake, 16,500 surface acres; Elephant Butte Reservoir, 40,000 surface acres; Caballo Reservoir, 11,500 surface acres; Alamogordo Lake, 4,500 surface acres.

In addition, there are approximately 175 smaller lakes and reservoirs in the State, most of which provide trout fishing, warm water fishing, or both. These lakes total approximately 375,000 surface acres.

In general, streams in the north half of New Mexico provide trout fishing, and streams in the south half provide warm water fishing. At lower elevations most of the watercourses are intermittent, and consequently provide no fishing. There are about 15 fishing streams in New Mexico that are over 20 feet wide and have a combined length of approximately 1,300 miles. There are approximately 250 fishing streams under 20 feet in width, and these streams total about 2,250 miles in length. By far the majority of these streams are located on public land, and consequently are available to the fishing public at no cost.

The New Mexico Game and Fish Department has provided access by acquisition, development, and road construction to approximately 25 fishing streams and lakes.

New Mexico's current Federal aid wildlife resource program is diversified, including a good balance between research, management surveys, acquisitions, developments, and maintenance of capital improvements.

Federal aid in fish restoration projects include statewide management surveys; investigation of aquatic weed-control techniques; statewide rough fish control and aquatic vegetation control; stream improvement developments; and the acquisition, development, and maintenance of trout and warm water impoundments.

New Mexico's Federal aid in wildlife restoration program includes statewide management surveys of all game species; trapping and transplanting of native game birds and animals, as well as the propagation and transplanting of exotic species; acquisition and development of waterfowl management areas; and maintenance of capital improvements.

The Fish and Wildlife Service of the Department of the Interior maintains four fish hatcheries and four wildlife refuges. In cooperation with the State fish and game department, efforts are being made to enhance fishing and game areas through restocking, development, and control.

To aid studies of migratory habits, a biologist bands a mallard at Bosque del Apache National Wildlife Refuge.

A new phase of developing fishery potentials on Federal areas, especially on Indian reservations, has been opened up by the Fish and Wildlife Service of the Department of the Interior in cooperation with tribal councils, the Department's Bureau of Indian Affairs, and State fish and game officials. Advice on the development of fishery waters has added tens of thousands of days of sport fishing in New Mexico each year. This type of fishing, open to the public on a small fee basis, provides a new source of revenue for tribal treasuries and a recreational industry that gives tribal members employment and income opportunities.

National Wildlife Refuges

A big game range encompassing 57,200 acres, the San Andres National Wildlife Refuge was established in 1941 for the protection and perpetuation of the Mexican bighorn sheep and other wildlife. The San Andres refuge is within the White Sands Missile Range and is, therefore, closed to entry except for an annual deer hunt. Hundreds of hunters utilize the refuge.

The Bosque del Apache refuge near San Antonio, N. Mex., was established on the Rio Grande in 1939 for the protection and feeding of wintering migratory waterfowl. It contains 57,191 acres of river bottom and hillside lands. Considerable development work remains to be done. Fishing is permitted on the refuge. In 1961 there were 2,500 fishermen and other visitors who utilized the area.

The Bitter Lake National Wildlife Refuge containing 7,400 acres is located on the Pecos River near Roswell, N. Mex. Established in 1937, this marsh development supplies excellent winter habitat for large numbers of ducks and sandhill cranes. A limited portion of the refuge is open to hunting of waterfowl and upland game birds. Fishing is also permitted. In 1961 there were 7,850 visitor-days use for fishing, hunting, and other purposes.

Under a lease arrangement with the Jicarilla Apaches, the Burford Lake management area of 2,000 acres on the Indian reservation in northern New Mexico is managed by the Bureau for waterfowl benefits.

Diversion dams, such as this one at Mesilla, channel the water so necessary for irrigation to nearby farm land.

Water and Power

"Water," to quote one of New Mexico's favorite writers, Erna Fergusson, "is what New Mexico never has enough of—except where and when it has too much." Because of its location in the semiarid Southwest, New Mexico's water resources are one of its most important assets, and are generally considered the factor that will control future economic growth.

The water supply of New Mexico is limited and critical, in comparison with the amount of water needed. Agriculture depends heavily upon irrigation because of the low rainfall, and New Mexico is the oldest irrigated area in the Nation. Much of the State lies within the Upper Rio Grande and Pecos River Basins, a

This irrigated cotton field (left) depends on water carried from reservoirs by laterals and canals (right and below).

region classified by the Senate Select Committee on Water Resources of the 86th Congress as the No. 1 water-short area of the Nation. These conditions emphasize the urgency, first, of properly utilizing the remaining undeveloped waters of the State, and second, of planning for the maximum use of fully developed water supplies.

The water and power resources of New Mexico occur primarily in five principal river basins: the Rio Grande, Pecos, San Juan, Canadian, and Gila River basins. The right to use surface water is governed by State law under the doctrine of prior right by use. Interstate compacts regulate the division of water by interstate streams among the States concerned. Most of

Elephant Butte Reservoir in central New Mexico provides recreational facilities and storage for irrigation water.

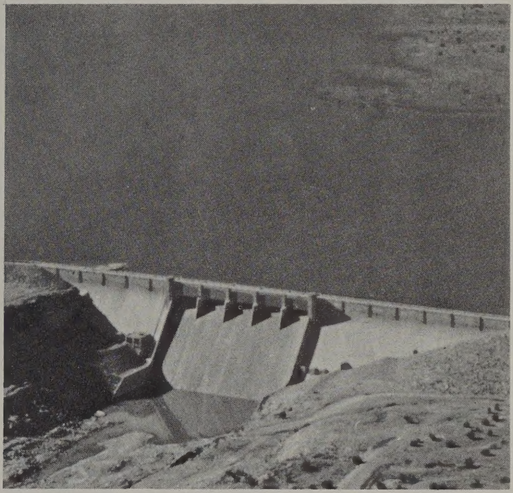
the surface water of New Mexico, except in the Colorado River drainage, has been appropriated and is used. Large supplies of ground water are available from alluvium of the intermontane valleys and the High Plains and from limestones in the Roswell and Carlsbad areas. Small supplies are available from the consolidated rocks elsewhere in the State.

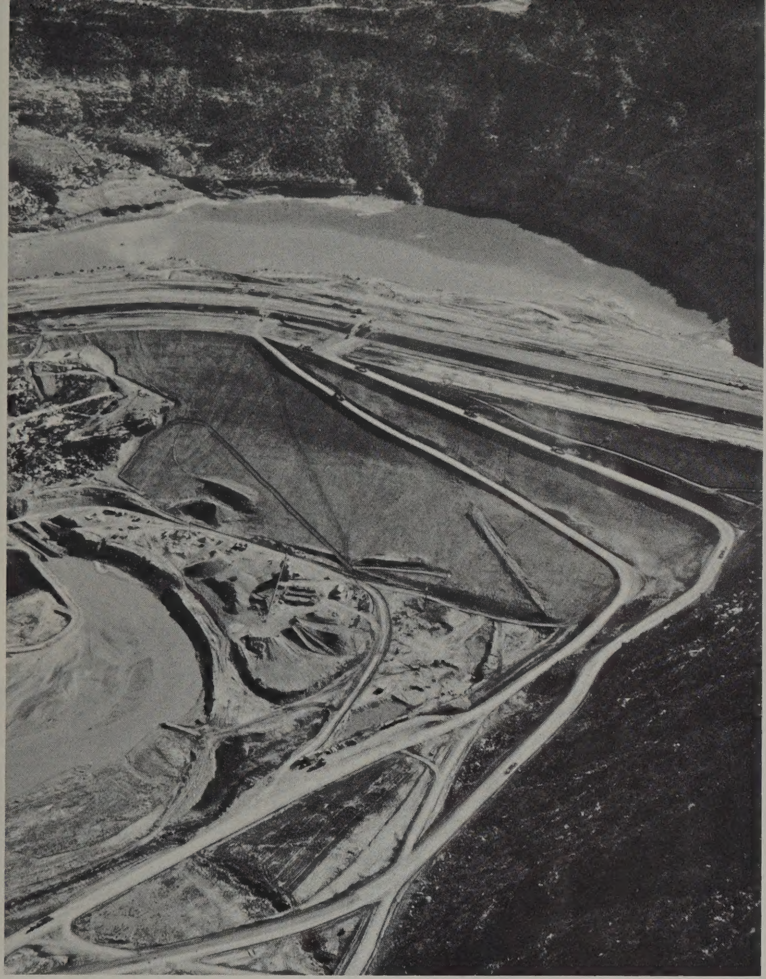
The Rio Grande, center of the Nation's oldest known inhabited area, is New Mexico's most important river basin. Coronado, in 1540, found irrigation activities on the river that were developed by the Indians of the period. Rising in the snow-clad peaks of southern Colorado and northern New Mexico, it flows southward through the central part of the State, embracing more than one-third of the State's land area and encompassing more than one-half of its total population. It provides the water supply for the two largest Bureau of Reclamation projects in the State, the Rio Grande and the Middle Rio Grande projects. Its waters, and those of its tributaries, supply many small subsistence-type irrigated rural communities, the capital city of Santa Fe, the rapidly growing industrial center around Albuquerque, and Las Cruces, the center of the State's richest agricultural area.

The surface waters of the Rio Grande Basin which drains nearly half the area of New Mexico are fully allocated for State, interstate, and international purposes by interstate compact and a treaty with Mexico.

The Pecos River basin is considered a separate stream system in New Mexico, although it flows into the Rio Grande in Texas, some 350 miles south of the New Mexico-Texas State line. It rises in the high Sangre de Cristo Mountains of north-central New Mexico and meanders generally southward for more than 500 river miles before leaving the State. Both the main stream and the tributaries provide irrigation water for important agricultural areas that include two Bureau of Reclamation projects—the Fort Sumner and Carlsbad projects.

Corps of Engineers' Conchas Dam and Reservoir supplies water for the Bureau of Reclamation's huge irrigation project at Tucumcari.





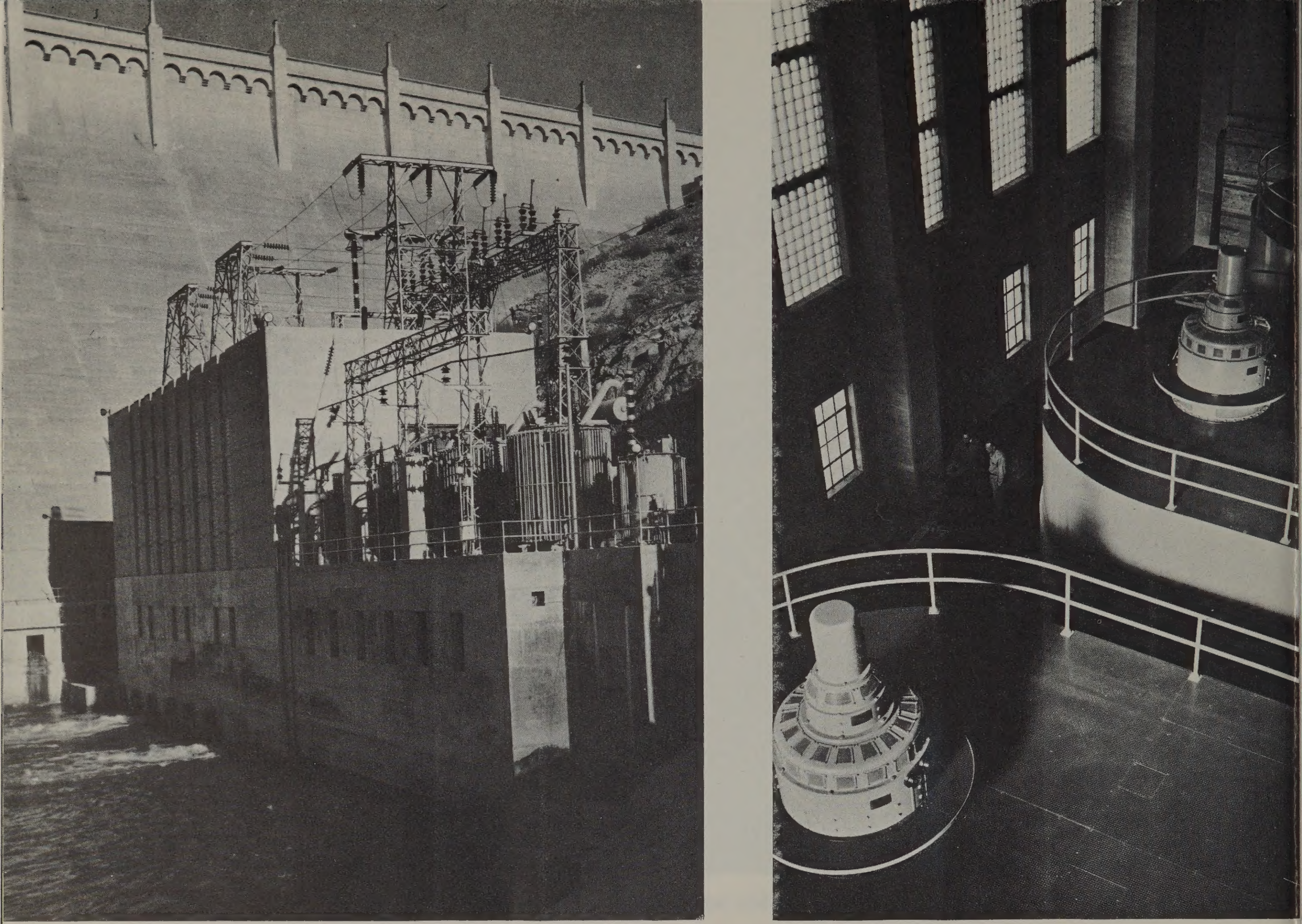
Reclamation's Navajo Dam stores waters of the San Juan River.

The lower portion of the basin contains the Roswell artesian basin, the area in which successful regulation of ground-water pumping by State legislative action was initiated.

The Pecos River and its tributaries are generally perennial streams of good quality in their headwaters, but in their lower sections they diminish or cease as a result of evapotranspiration, percolation into sandy beds, or other causes. The quality deteriorates progressively downstream, due in part to the presence of salt beds of various kinds just beneath a porous limestone. The National Resources Planning Board estimated the average annual water production at 1,095,000 acre-feet, 67 percent of which is in New Mexico. The surface waters, all of which are considered appropriated, are apportioned between the two States by an interstate compact.

The San Juan River, in the northwestern corner of the State and west of the Continental Divide, contains the only large quantity of undeveloped water in New Mexico. Apportioned under the Upper Colorado River compact, this consists of 11.25 percent of the Colorado River water available to the Upper Basin States. On the basis of longtime records, this compact allocation is expected to average about 838,000 acre-feet annually. Only a small part of this total is presently developed, but the potential uses to which it can be put are far greater than the supply.

Needs for this water have already developed in the neighboring Rio Grande Valley, and the needs within the San Juan Basin in connection with the large reserves of uranium, oil, gas, and coal cannot be very far in the future. The need for a large segment of this supply to improve the economic condition of the Navajo Indians in the San Juan Basin is already acute. Utilization of most of the San Juan Basin water available to New Mexico is provided for in the San Juan-Chama and Navajo Indian reclamation projects authorized by the 87th Congress.



One Federal powerplant is operated in New Mexico at Elephant Butte Dam. The generators are shown at right.

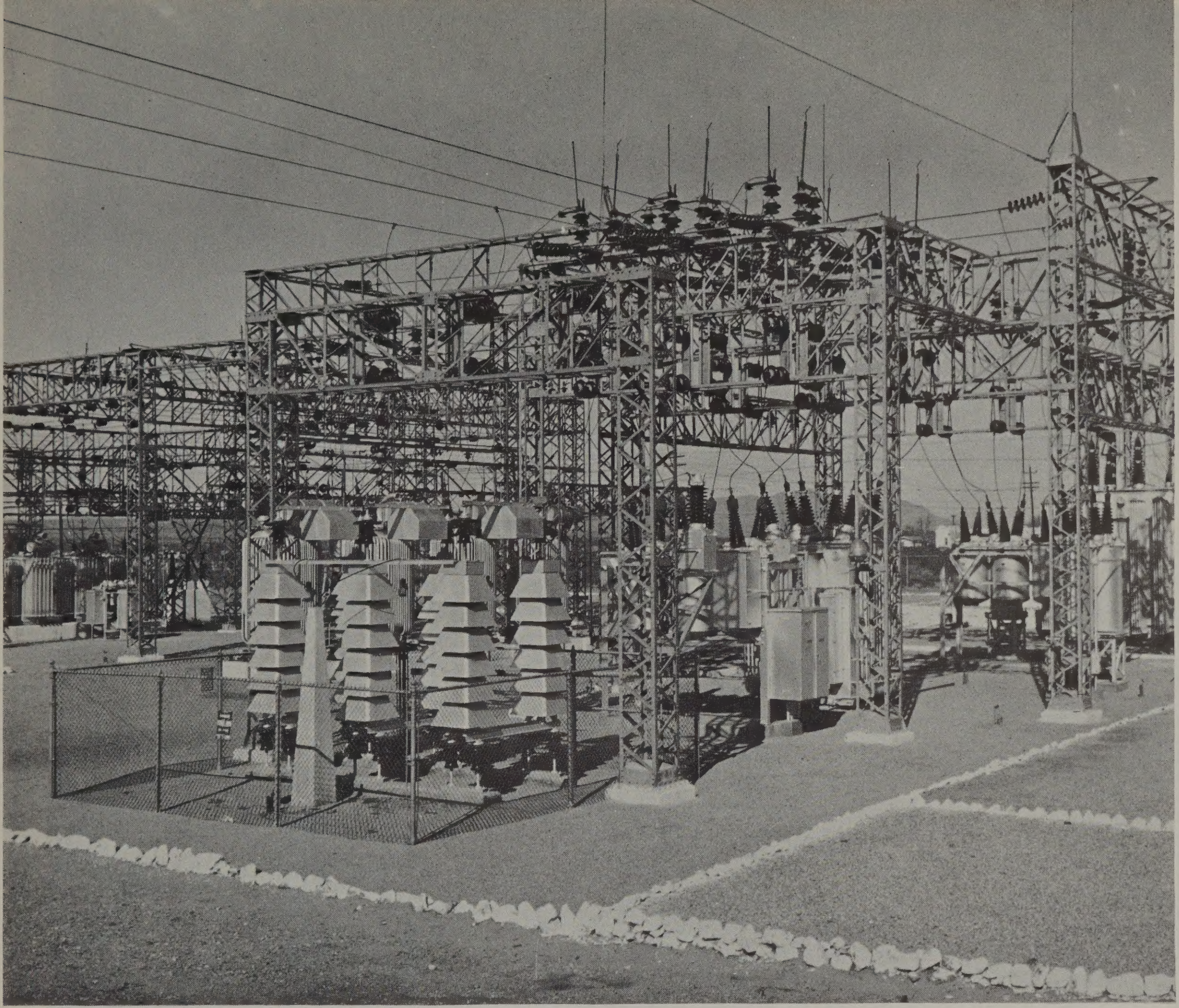
The Canadian River basin, in the northeastern part of the State, rises on the eastern slopes of the Sangre de Cristo Mountains and flows generally southeastward for more than 200 miles before leaving the State at the eastern New Mexico-Texas State line.

In its upper reaches the Canadian River and its tributaries provide water supplies for numerous small towns, and for many irrigated areas, a large number of which are the subsistence-type communities with small landholdings typical of the north-central part of the State. In these upper reaches, above Conchas Reservoir, the surface waters are considered fully appropriated.

The Gila River and tributaries rise along the Black Range of the Continental Divide and the high peaks of the Mogollon and San Francisco Mountains and flow generally in a southwesterly direction before leaving the State at the New Mexico-Arizona boundary.

There are no large towns in the Gila watershed, although the river and its tributaries provide water for two important irrigated areas and for a great many small irrigation enterprises. There are no Bureau of Reclamation projects in the New Mexico portion of the basin. Forestry and recreation are important in the area, and the watershed contains one of the largest wilderness areas, set aside by Forest Service, in the United States.

The Bureau of Reclamation and the U.S. Army Corps of Engineers are active in water resource development in New Mexico. The Geological Survey engages in water research relating to New Mexico water supplies, and the Office of Saline Water has constructed one of the five saline-water conversion demonstration plants authorized by Congress in Roswell, N. Mex.



Through transformer substations such as this, electricity goes to New Mexico's farms, cities, and industries.

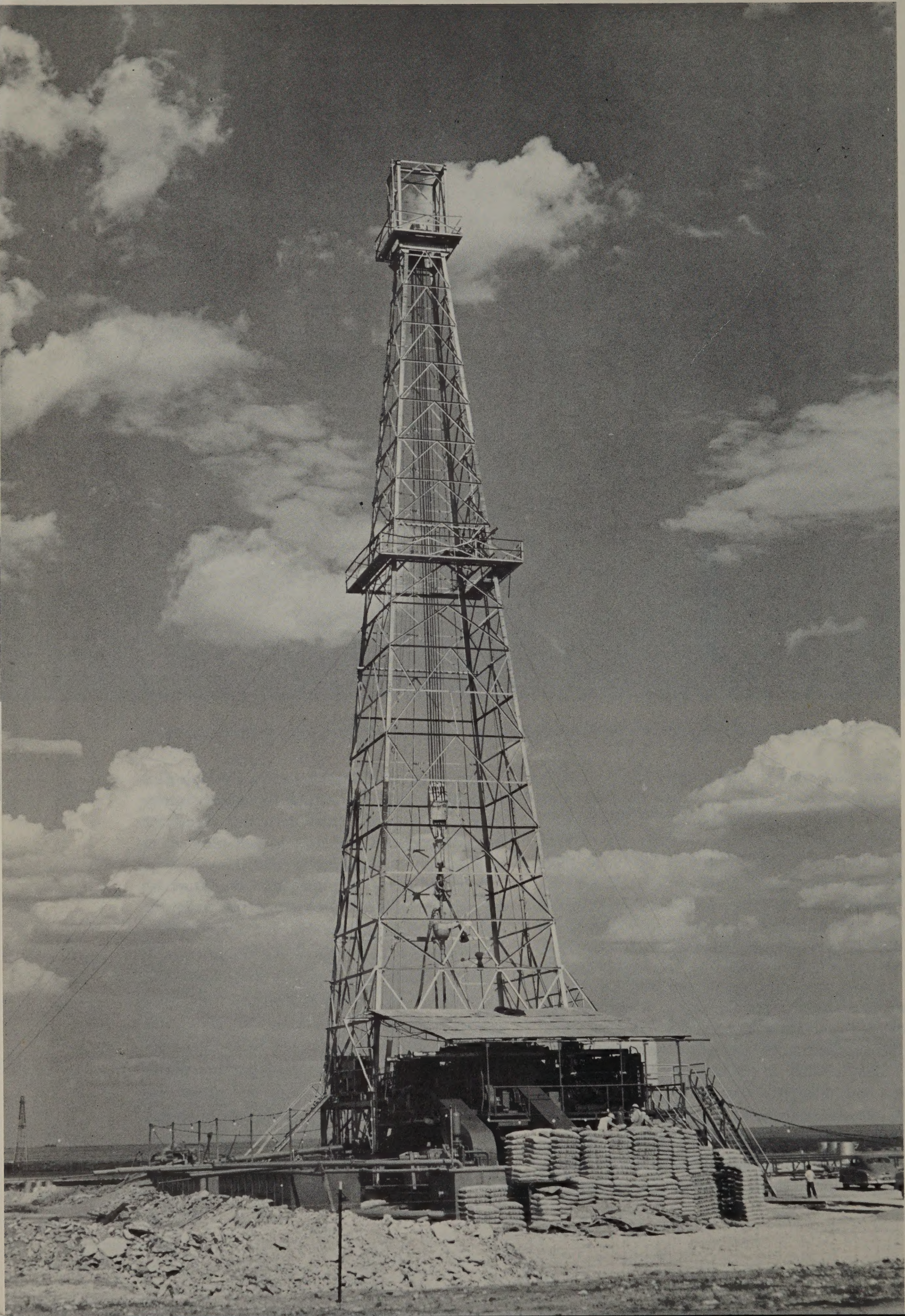
Power Resources

Hydroelectric potentialities existing in New Mexico occur primarily on the Rio Grande because of the mountainous terrain in its upper reaches and the relatively larger streamflows available. Other streams contain potential sites for peaking plants. However, competition for high-priority use of the limited water supply restricts the production of hydroelectric power.

Power needs throughout the State are mainly supplied by the private power companies and electric-generating cooperatives. In rural areas, the distribution is largely by cooperatives.

The inability to operate reservoirs effectively for both irrigation uses and power generation has limited hydroelectric power development in New Mexico. Only one Federal plant, a 24,300-kilowatt installation at Elephant Butte Dam, is in operation in the State. This plant is operated by the Bureau of Reclamation on a schedule controlled by water releases made for higher priority purposes. In conjunction with this plant, the Bureau operates 11 substations and 490.8 miles of 115-kilovolt transmission lines.

Possibilities for development in the future are expected to be limited by the competition for the water supplies and the priorities already established by present uses. The importance of this competition is reflected by the prohibition, contained in the Colorado Storage Project Act, against power generation on the San Juan-Chama project. There will, however, be excellent opportunities for pumped-storage peaking power generation at San Juan-Chama and elsewhere. The State will also receive its share of energy generated at the Glen Canyon Dam in Arizona and other multipurpose projects of the Colorado River storage system.



(Left) Oil production has steadily increased in New Mexico, contributing significantly to the economy.

Mineral Resources

The "Land of Enchantment" is also a land of great mineral wealth. Ever since Coronado, more than four centuries ago, led a band of gold-hungry Spanish explorers into the region that is now New Mexico, mineral development has been one of the State's major activities.

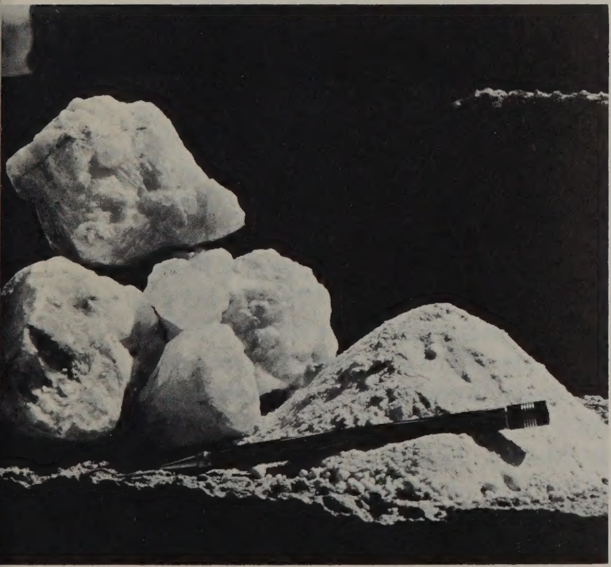
Gold is mined in New Mexico today, but the State is also a source of many other important mineral products. It leads all other States in production of potash and uranium, and is the chief source of carbon dioxide, perlite, and potassium salts. The State is one of the four largest suppliers of natural gas and pumice. It ranks seventh among the States in the total value of its mineral output.

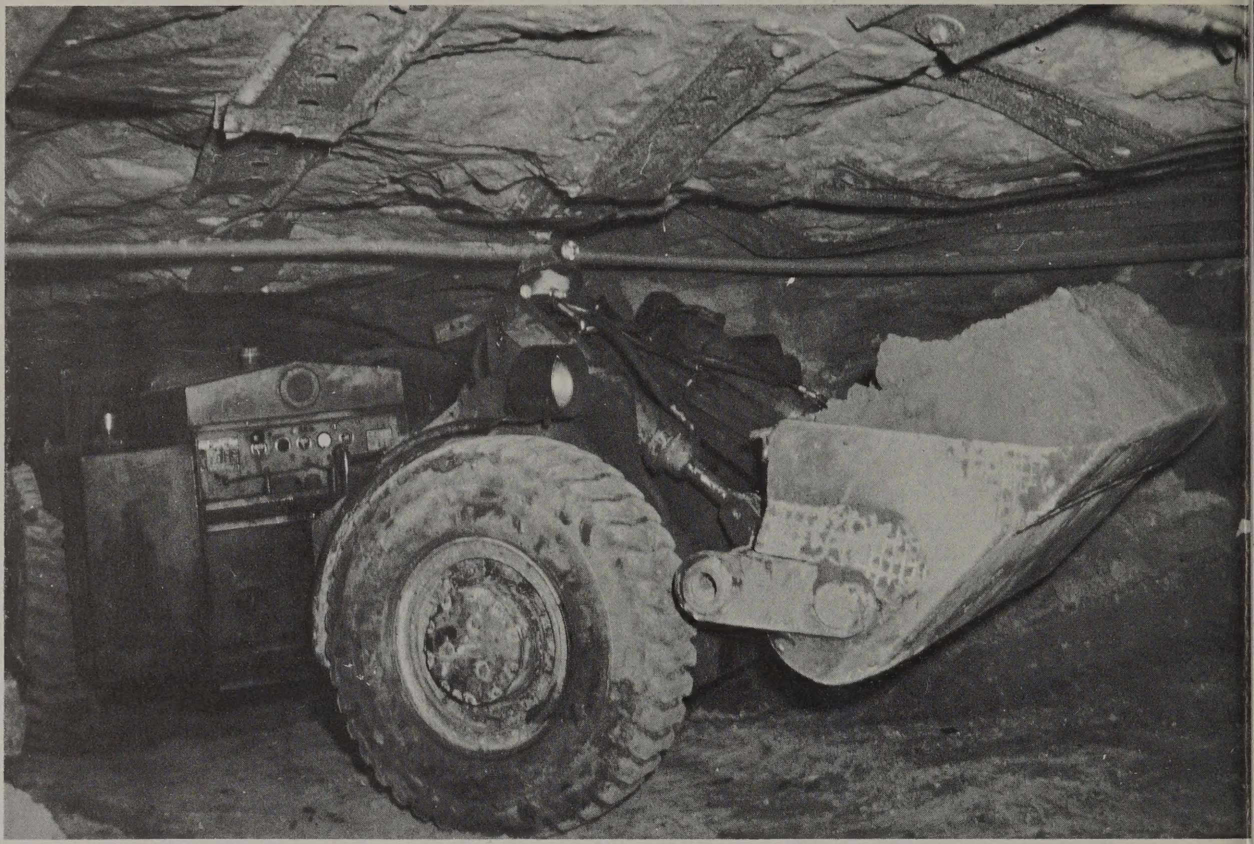
There are important mineral resources of oil, gas, coal, potash, potassium, phosphate, sulfur, sodium, gypsum, and uranium on the public lands of New Mexico, embracing approximately 10 million acres. The total value of extracted minerals from these lands is in excess of $202 million with royalties from mineral leasing slightly more than $21 million. Of this revenue, 37½ percent is returned to the State to be used for schools and road construction, and 52½ percent is placed in the Reclamation fund to assist in development of the State's water resources. The Bureau of Land Management handles the mineral leasing on public lands and the Geological Survey exercises field supervision of development and production activities in the interest of conservation, and vital research on the efficient utilization of the State's mineral resources is conducted by the Bureau of Mines.

Mineral Fuels

The most valuable by far of New Mexico's mineral products are petroleum and natural gas. These two fuels bring approximately two-thirds of the more than $650 million annual value of

(Left below) Large deposits of fluorspar ore, used in steel manufacture, are mined near Deming. New Mexico ranks first in domestic uranium production, obtaining the mineral from such mines as the open-pit Jackpile at right.





mineral products. Oil output has risen steadily in New Mexico and now exceeds 100 million barrels a year. Natural gas production, obtained from both oil and gas wells, is growing even faster. In recent years, New Mexico wells have been yielding gas at the rate of 800 billion cubic feet annually.

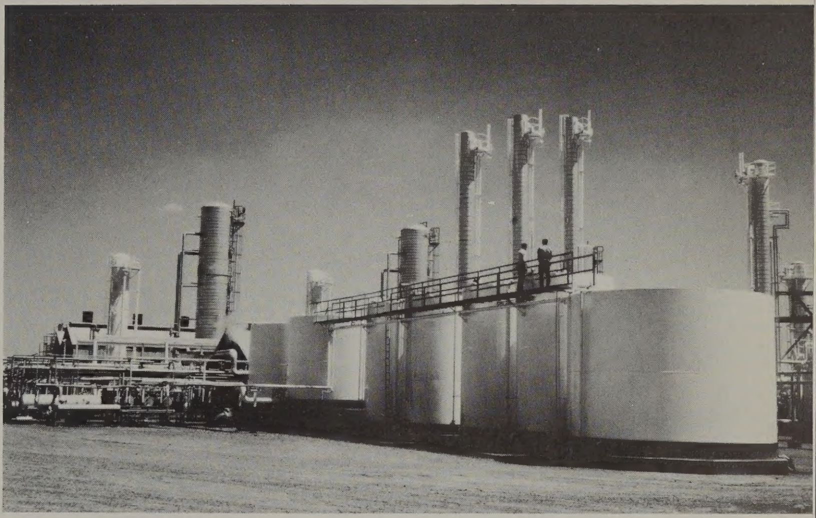
Oil production comes mainly from the Pecos Valley and Llano Estacado regions in the southeastern part of the State. Chavez, Eddy, Lea, and Roosevelt Counties, all in the southeast, have nearly 13,000 active oil wells. However, this "black gold" also is found in northwestern New Mexico. More than 1,400 wells, supplying nearly 15 percent of the State's total output, are located in McKinley, Rio Arriba, Sandoval, and San Juan Counties. A large portion of these wells in the Four Corners area are located on Indian reservation lands and their development is bringing important income for the present and future benefit of the Indians.

New Mexico's natural gas industry has progressed rapidly in recent years. At-the-well value of this important fuel has rocketed from roughly $35 million to more than $85 million annually since 1954. Lea and Eddy Counties in the southeast, and San Juan County in the northwest, contain the largest gasfields. From them, the gas is piped to many of New Mexico's cities and also to Texas, Arizona, California, the Pacific Northwest, and even to old Mexico.

Over 80 percent of the State's natural gas output is further processed to obtain natural gasoline and other products such as butane, propane, and carbon black. Helium, for important uses in industry and defense, is recovered from natural gas at the Government's Navajo helium plant near Shiprock. The gas wells of New Mexico also supply most of the Nation's carbon dioxide, which is marketed to consumers both in liquid form and as the well-known "dry ice."

New Mexico has important resources of bituminous coal, and some anthracite. Colfax and McKinley Counties are the leading coal producers, supplying approximately 90 percent

(Left) A shuttle car hauls uranium ore from workings deep underground in a McKinley County mine.



(Right) This plant at Kirtland is one of many which process New Mexico's important gas resource.

of the State's high output in recent years.

Metals Support Major Industries

Copper mining, another major industry of New Mexico, had its beginning in 1800, when some Mexican miners found vast deposits of the red metal at Santa Rita in Grant County. Today, nearly all production comes from three large mines—Chino and Bayard in Grant County, and Bonney-Miser's Chest in adjoining Hidalgo County. Improvement in mining and smelting methods has enabled New Mexico's copper producers to develop vast deposits of low-grade ore and has made this industry a bulwark of the State's mineral economy.

New Mexico is first among the States in production of uranium ore. The ore is obtained from 78 mining operations in 5 counties, of which McKinley—with 65 mines—is the leading producer. Nearly 4 million tons of uranium ore, averaging better than 4 pounds of uranium oxide per ton, is produced annually.

Some uranium ores in the Carrizo Mountains of San Juan County contain significant amounts of vanadium, which is recovered as a byproduct and sold for use in steelmaking.

Nonmetals

New Mexico supplies nearly 80 percent of the perlite produced in the United States. This so-called mineral popcorn has many uses, particularly in making lightweight aggregate, concrete, and building plaster. Most of the perlite comes from the "Seven Hills of Taos" area in the north-central part of the State.

Long the leading producer of potash, New Mexico is still expanding its output of this important mineral. The potash is extracted from the mines of the famed Carlsbad area, and processed at plants as far away as Vicksburg, Miss. Five major potash producers in the Carlsbad region have joined with a company operating at Searles Lake, Calif., establishing a foundation for international potash research to develop programs for efficient and beneficial use of potash.

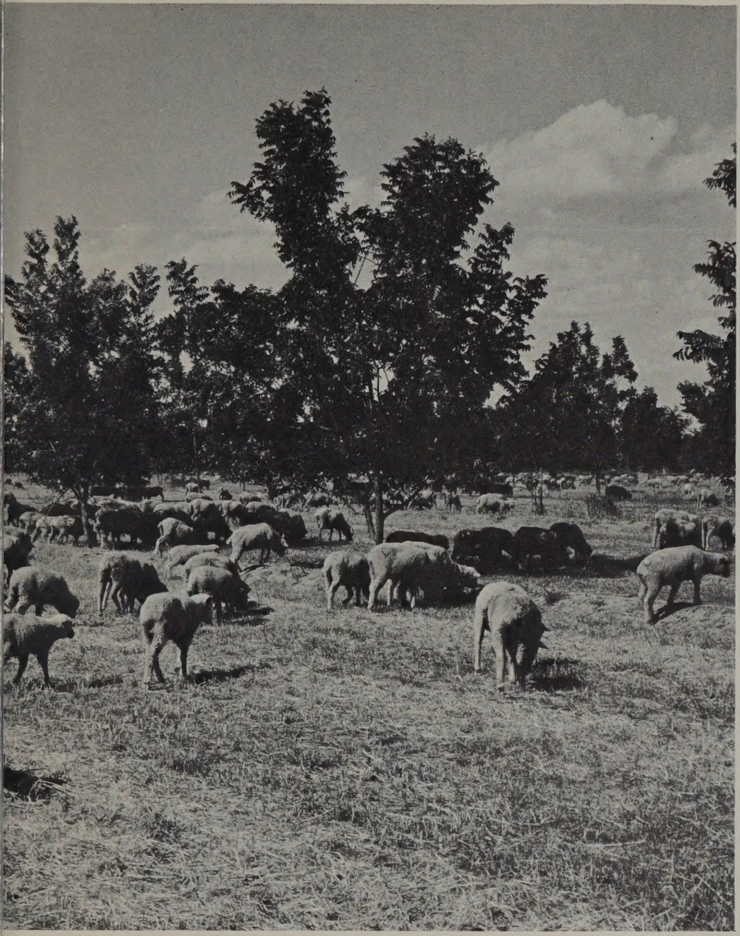
New Mexico's land holds many valuable resources. Combined with sunshine and water, the rich land nourishes vegetable

Land and Forests

Most of New Mexico's land area consists of high plateaus or mesas with numerous mountain ranges, canyons, valleys, and dry arroyos. With a small amount of annual precipitation, the State is semiarid. But, when water is added to rich soil under New Mexico sun, the results are astonishing.

Irrigation makes possible bounteous crop yields on the fertile farmland and healthy livestock on good grazing land. Water aids in the harvesting and manufacture of New Mexico's rich forests, a valuable part of the State's land resources. Only well-forested and well-grassed land will insure the future of stockraising and irrigation farming.

An ever-growing use of the land in New Mexico is recreation. National forests, public- and State-owned lands provide a variety of opportunities for visitors and vacationists.



farms and livestock on fine grazing areas. Lumber and wood products come from forests covering nearly a fourth of the State.

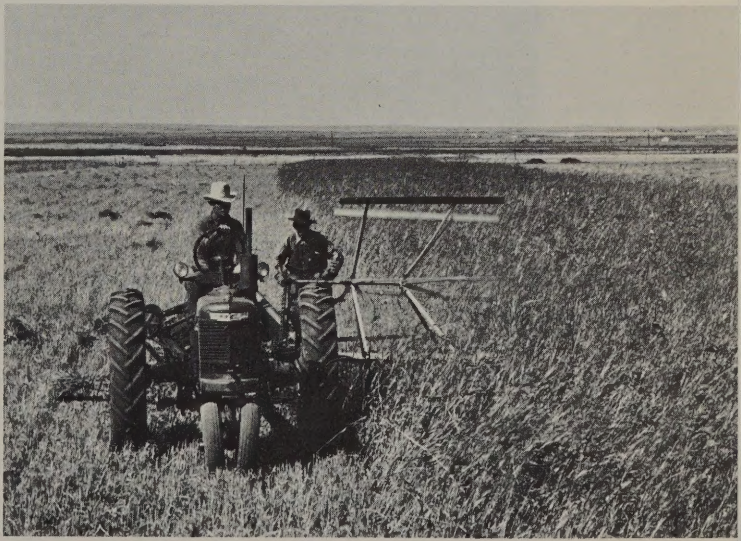
Included in New Mexico's 77.8 million acres are 32.3 million acres, or 41.6 percent of the total land area, under private ownership; 27.5 million acres owned by the Federal Government; 11.5 million acres under State ownership; and 6.3 million acres of Indian lands.

Timber Resources

New Mexico's forest lands include 21,329,000 acres, or about a fourth of the total land area. They extend from the commercial forests of the relatively higher elevations down into the woodlands, or noncommercial forests, on the desert fringe. At the lower elevations, the woodlands are valuable chiefly for wildlife, recreation, and grazing. There are seven national forests in New Mexico, containing 57.3 percent of the timber within the State.

Approximately 6 million acres of forest lands are classified as commercial stands. Commercial

Irrigation makes possible bounteous grass crops which are important to the livestock industry.



forests are composed chiefly of ponderosa pine, Douglas-fir, white fir, and Englemann spruce, and are important in the economy of the State and Nation. This valuable sawtimber resource, combined with that of neighboring Arizona, comprises one of the world's largest continuous ponderosa pine forests.

Forests provide direct employment for more than 2,100 residents of New Mexico and many other people are indirectly employed through forest industry operations.

But noncommercial forests are valuable for other vital aspects. In addition to recreation and wildlife purposes, they provide important watershed protection.

Land area of forest resources include:

Class	Acres	Percent of total
Total	77, 767, 000	100. 0
Nonforest land	56, 438, 000	72. 5
Forest land	21, 329, 000	27. 5
Commercial	5, 735, 000	7. 4
Noncommercial	15, 594, 000	20. 1

Ownership of the commercial forest lands in New Mexico:

Owner	Acres	Percent of total
Total	5, 735, 000	100. 0
Federal Government	3, 127, 000	54. 5
State government	158, 000	2. 8
Local government	5, 000	(1)
Indian	712, 000	12. 5
Private	1, 733, 000	30. 2

---

[1] Less than 1/10 of 1 percent.

According to the latest available figures there are some 137 plants in the State engaged in the manufacture of lumber and wood products. An additional 90 plants make furniture and fixtures, and there are some 200 printing and publishing plants using wood-products paper in producing books, magazines, newspapers, and other printed material.

The current timber harvest exceeds the growth replacement. Good management can eventually stabilize the annual cut at about 121 million board feet provided all ownerships base their management on sustained yield. The improved and faster growth can even increase this sustained annual cut. Improvement in logging practices, such as low stumps and bucking for better utilization, can add to this annual yield.

Range Uses

There are approximately 46 million acres of rangeland in New Mexico, of which some 14 million acres are Federal lands, 11 million acres are State lands, and 20 million acres are private lands.

New Mexico is the birthplace of the livestock industry in the United States. Some of the ranges have been in continuous use since 1600 when the Spanish colonizer, Don Juan de Onate, established Spanish settlers in the river bottoms of the Rio Grande.

Most of the range is semiarid country and is susceptible to excessive erosion when overgrazed by livestock or otherwise disturbed. The proper control of grazing has been a problem for generations.

The cattle industry constitutes a vital part of the State's economy. Total cash receipts from the marketing of cattle and calves is about $120 million annually.

Expenditures of about $25,200,000 in a recent year by cattle producers were made for the following items: Hay and grain; veterinary and medical expenses; truck, tractor, and machinery purchases; repairs and fuel on autos, trucks, and trailers; repairs on ranch buildings and improvements; hired labor, etc.

The sheep industry—sheep, lambs, and wool—adds about another $10 million of income to the State and is an important segment of the economy.

Agricultural Industry

The agricultural picture in New Mexico is changing as the State becomes more industrialized. Farms and ranches are diminishing in number, but they are growing in size and degree of mechanization.

Improved farming methods and farm-to-market roads, together with better marketing facilities, allow the New Mexico farmer to make timely shipments to markets in the surrounding areas.

Livestock farms are the most numerous in

To this farmer, water means cotton and alfalfa from productive soil.

New Mexico, accounting for about 27 percent of all farms in the State. Other major types of farms and their percentages are as follows: Cotton, 13 percent; dairy and poultry, 5 percent; cash-grain, 4 percent; fruit and vegetable, 3 percent; and field crop, 1 percent.

The sales of farm commodities in New Mexico, according to the most recent census of agriculture, totaled more than $197 million. Of this total, 55.3 percent came from sale of livestock and livestock products and 44.7 percent came from sale of crops. Sale of cattle and calves accounted for 42.3 percent of cash receipts; cotton, 28.1 percent; milk, 4.7 percent; sorghum, 4.5 percent; alfalfa, 3.8 percent; wheat, 3.2 percent; vegetables, 1.6 percent; and fruit and nuts, 1.4 percent.

Agriculture industries have developed in scope and size and have been an influence on farm practices and enterprises. Commercial slaughter of livestock has increased rapidly and has encouraged livestock feeding by creating a local market.

Feed-processing plants, which furnish a variety of mixed and pelleted feeds, have created a market for grain and alfalfa. Mills have made increased acreages of alfalfa profitable in some areas. Oil mills, which process peanuts and cottonseed, have improved the markets for these crops.

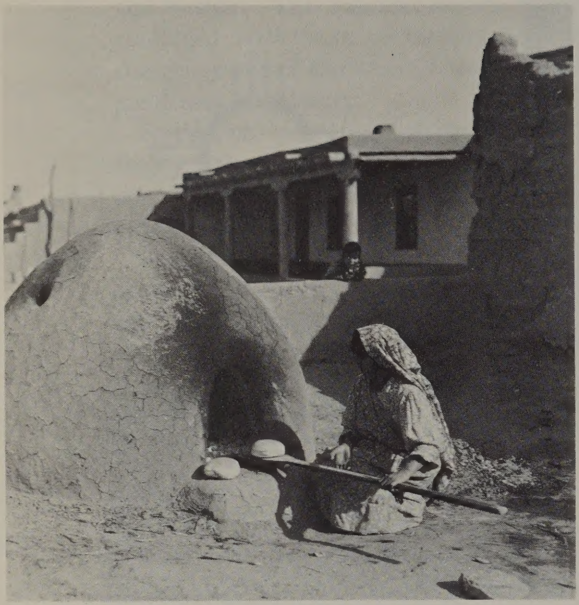
Acres harvested in New Mexico decreased from 1,148,000 in 1960 to 1,125,000 in 1961, but the value of crops produced increased from $103 million to a record $119 million—a testimony to improved agricultural technology. Cotton lint, cottonseed, and wheat account for $14 million of the $16 million increase.

A comparison of New Mexico's per-acre yield with that of the United States shows that cotton lint and winter wheat, two of New Mexico's important crops, are above the national average. Sorghum grain, all hay, and peanut yields per acre are also above the national average.

Grading, packing, and cooling facilities have enabled New Mexico vegetable and fruit producers to compete in the national markets with uniformly high-quality products. This has resulted in a profitable increase in acreage of such crops as apples, lettuce, carrots, onions, and several minor crops.

Water again is the most important limiting factor in New Mexico's agricultural production. On approximately 73 million acres, precipitation limits the number of livestock kept and the production of the ranches. On approximately 2 million acres of dryfarming land, the amount of precipitation determines whether farmers will plant and harvest. Production on approximately 873,000 acres of irrigated land is dependent on precipitation in New Mexico and Colorado.

Since 1950, there has been large development and use of underground water resources. About 423,000 acres are irrigated wholly from wells and 177,600 acres partially supplied by wells.



A woman bakes bread in out-door adobe oven, a landmark seen near many of New Mexico's Indian Pueblos.

Indians and Their Resources

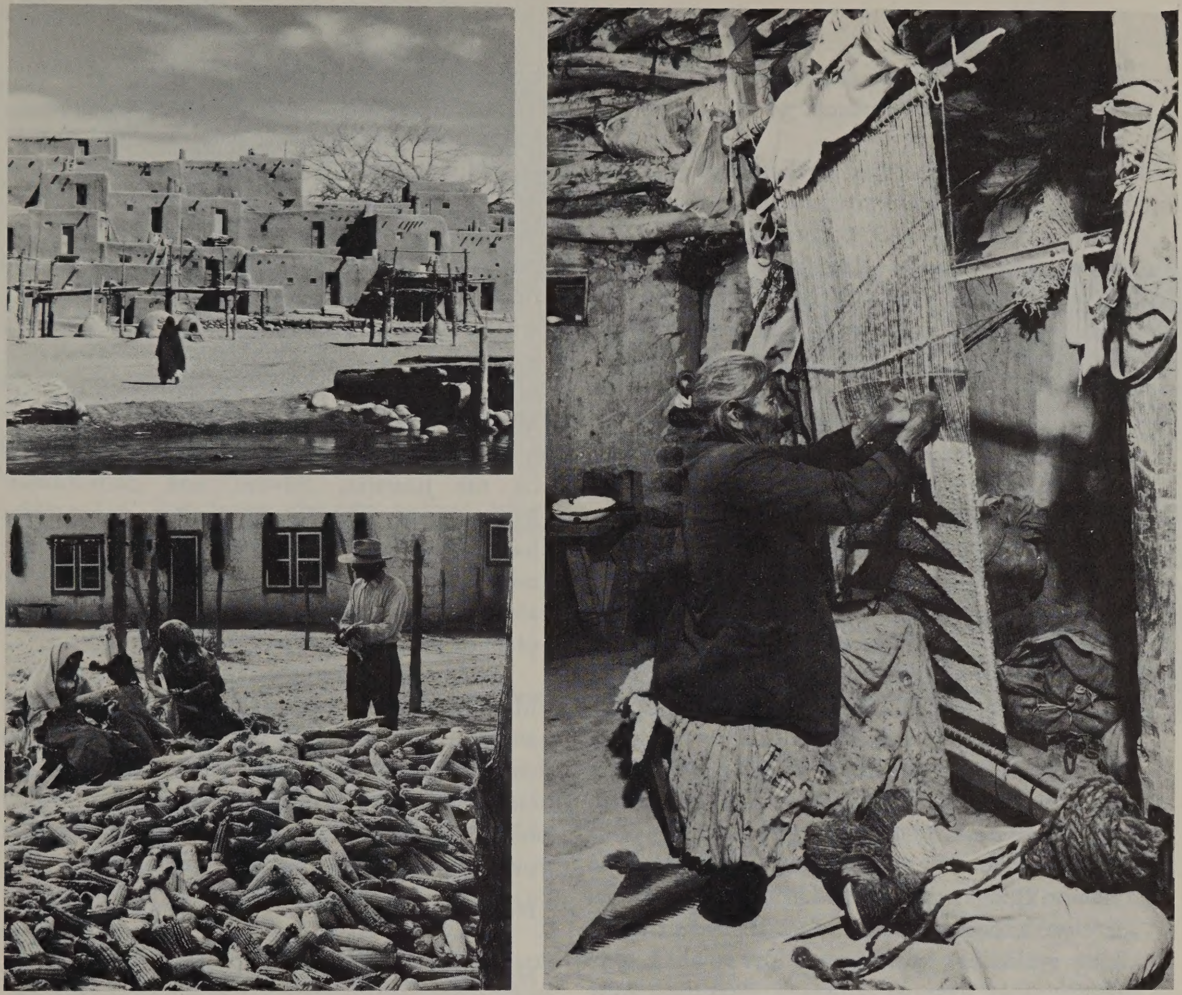
New Mexico, with an Indian population of over 50,000 is topped in Indian citizenry only by Arizona and Oklahoma. It is the home of 4 different Indian tribal groups who reside in 19 pueblos, on 4 reservations, and in several Indian "communities."

The Pueblo Indians are New Mexico's indigenous Indian population. Their origin is buried in antiquity. They were the first people to be contacted by the Spanish conquistadors in 1540. These agricultural Indians lived in multileveled adobe structures which have been called "the first apartment houses." Their communities are known as pueblos and are located on approximately the same lands where their ancestors lived during the early Spanish occupation.

Comparative latecomers to the region are the nomadic tribes: the Apaches, Navajos, and Utes. The Comanches, representatives of the southern Athapascan and Shoshonean stocks, also were present in New Mexico around 1705, but by 1875 were settled in Oklahoma. The Utes, now considered Colorado Indians, still occupy and use about 107,000 acres of tribally owned grazing land in northern New Mexico. The Jicarilla and Mescalero Bands of the Apache Tribe, totalling approximately 2,445, reside on 2 reservations within the State. Nearly 30,000 Navajo Indians (over a third of the total population of that tribe) live on or adjacent to about 2,500,000 acres of New Mexico lands held in trust for them by the Federal Government.

Lands

Indian trust lands in New Mexico total 6,464,856 acres. Of this total amount, 5,816,192



Taos Pueblo Indians live in high terraced communal dwellings similar to those of their ancestors. With a culture centuries old, Pueblos continue their artistic handicrafts and carry on the agricultural tradition in family tasks like corn husking.

acres are tribal lands and 648,665 acres are owned by individual Indians.

The largest reservation area in the State is the New Mexico portion of the Navajo Reservation (other portions lie in Arizona and Utah) comprising about 2,300,000 acres of tribal land. Individual Navajos own about 175,000 acres of off-reservation lands in New Mexico lying east and south of the reservation which are held in trust for them by the Federal Government. Other reservations in the State range in size from 741,974 acres on the Jicarilla Apache Reservation to 11,598 acres on Pojoaque Pueblo.

It is anticipated that the Indian-owned acreage in New Mexico will stay the same although some minor variations may occur as a result of transactions involving lands held by individual Indians.

Minerals

The principal minerals known to exist and under development on Indian lands in New Mexico are oil and gas, coal and uranium. Other minerals of minor importance are gypsum, copper, iron, titanium, and sand and gravel.

There are about 1,300 oil and gas leases in effect on Indian lands. Around 900 of these are located on Navajo lands and 260 on the Jicarilla Apache Reservation. Most of the remainder are located on that part of the Southern Ute Reservation in New Mexico and tribal lands of the Pueblos of Acoma and Laguna.

Oil and gas development on Indian-owned lands in northwestern New Mexico began in the 1920's but received its greatest impetus following discovery of oil and gas in the Four Corners area in 1954. Since that time the construction of pipelines and other facilities has accelerated the development of oil and gas in the area.

Following World War II, there was an extensive search for uranium throughout the Southwestern United States. Several hundred permits were issued on the Navajo Reservation and many others on lands of the Pueblo Indians. Most of the Navajo permits were issued to tribal members who assigned them to non-Indians.

The Atomic Energy Commission, the sole purchaser of uranium concentrates, curtailed its purchasing program in 1958. Since that time there has been relatively little new uranium prospecting or leasing activity on Indian lands. Several hundred leases were issued prior to 1958—not necessarily producing leases.

At the present time there are nine producing uranium leases on Indian lands in New Mexico. Among these, however, is the Jackpile mine on the Pueblo of Laguna from which 5,600,000 tons of uranium ore has been removed since it was opened in 1952. Royalties paid to the Pueblo of Laguna have amounted to approximately $9,700,000.

Large deposits of coal are located on the Navajo Reservation in New Mexico. The coal is close enough to the surface to permit stripping operations but it is of low quality, precluding long haulage. In early 1963 there were two coal mining leases in effect on Navajo lands in New Mexico. One covered about 25,000 acres to supply fuel for a thermal electric power plant near Fruitland. The other embraced roughly 8,700 acres and was part of a plan to produce motor-fuel components and gaseous hydrocarbons. There were also two coal-prospecting permits in effect covering a total of about 125,000 acres.

Timber

Five Indian reservations in New Mexico have commercially important forest resources. These reservations are the Jicarillo, Mescalero, Navajo, United Pueblos, and Zuni-Ramah.

Of the more than 2 billion board feet of timber cut on these reservations, eighty-four percent is ponderosa pine, 12 percent Douglas-fir, 3 percent white fir, and 1 percent miscellaneous species.

The Navajo Sawmill, a new tribal enterprise, is of the most modern design and has created a new community known as Navajo, N. Mex. The mill, costing approximately $8.5 million, has a capacity of about 35 million feet a year In addition, 15 million feet of rough lumber is expected to be cut by the old tribal mill (located in Arizona) and transferred to the new mill for finishing. These volumes will be cut entirely from Indian lands on the Navajo Reservation, which includes parts of Arizona and Utah as well as New Mexico. Approximately 44 percent of the total volume to be cut is located in New Mexico.

New forest inventories have been completed on the Jicarilla, Navajo, and Zuni-Ramah Reservations. Results from these inventories have increased the allowable annual cut, permitted under sustained-yield management, by almost 100 percent. A new forest inventory is planned for the Mescalero Reservation.

In addition to commercial timberlands in New Mexico, the five reservations mentioned above and the Ute Mountain Ute Indian Reservation contain 831,650 acres of noncommercial timberlands supporting an estimated volume of 1.7 billion board feet of timber, principally piñon pine, juniper, and other mixed conifers.

Irrigation

Within the Indian reservations and pueblos of New Mexico, there are 47 irrigation projects or systems ranging in size from approximately 15,000 acres to small subsistence garden tracts of just a few acres.

The Bureau of Indian Affairs is studying all Indian irrigation projects and systems of the State looking toward three main objectives: (1) Completion of existing projects in accordance with present congressional authorizations; (2) development of additional Indian water resources requiring authorization by the Congress; and (3) rehabilitation and betterment of existing irrigation systems so as to transfer the operation and maintenance responsibilities from the Government to acceptable water users' organizations.

The Navajo irrigation project, part of the Colorado River storage project recently authorized by Congress, will when constructed provide irrigation to more than 110,000 acres of land on the Navajo Reservation.

On the six Indian pueblos lying within the Middle Rio Grande Conservancy District, a

(Above) A Zuni Indian silversmith fashions delicate jewelry. Zunis, in western New Mexico, are renowned for their pottery and silver work.

(Right) The Navajo Indians built one of the most modern sawmills in the Southwest on their reservation.

long-range program of consolidation of holdings, clearing, leveling, and redevelopment of lands was started in the 1950's and carried forward in the 1960's to increase the size of farm units and to provide for more efficient use of land and water.

On the Hogback project of the Navajo Reservation, members of the tribe receive training in irrigated farming under a tribally financed program.

The water resources associated with Indian reservation and pueblo lands comprise one of the most valuable Indian assets. The population growth of recent years and the prolonged drought over the past several years have made the control of water supplies subject to acute competition. To protect this valuable Indian asset, the Bureau of Indian Affairs works with tribal groups for full development of their land and water resources.

Range Resources

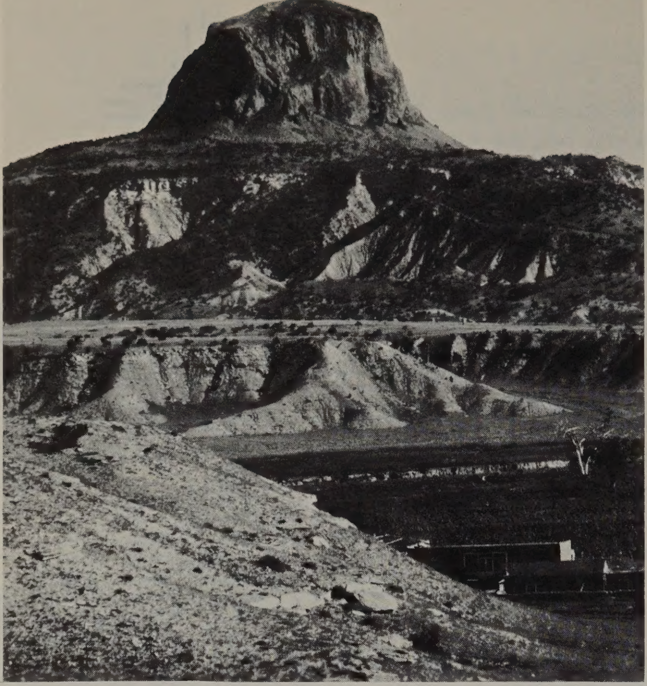
Over 87 percent of the Indian land in New Mexico is classified and used as range for grazing of Indian-owned livestock (19,700 cattle, 6,800 horses, 146,400 sheep). The rangeland is, for the most part, tribally owned and is used free by tribal members.

Over one-half of the Indian rangelands in this State represent Navajo and Pueblo Reservations and contain difficult management problems which are due to chronic drought and small herds. Since too many Indians are attempting to make a living from their limited range resources, there has been severe overgrazing for many years. One of the Bureau's major aims is to develop broader job opportunities so that fewer tribal members will have to depend on stockraising for a livelihood. Good progress in range management has been made on the Jicarilla and Mescalero Reservations.

Recreation Resources

Only in recent years have the Indians of New Mexico and elsewhere begun to recognize the income-producing potentialities of well-planned tourist developments on their reservations. In New Mexico, these potentials could most readily be developed for use by the populations centered in Santa Fe and Albuquerque, and in El Paso, Tex.

The Mescalero Apache Tribe has developed a tourism program to capitalize on the recreation potential of the reservation. Similar programs are in prospect on the Jicarilla Apache Reservation and several of the pueblos.



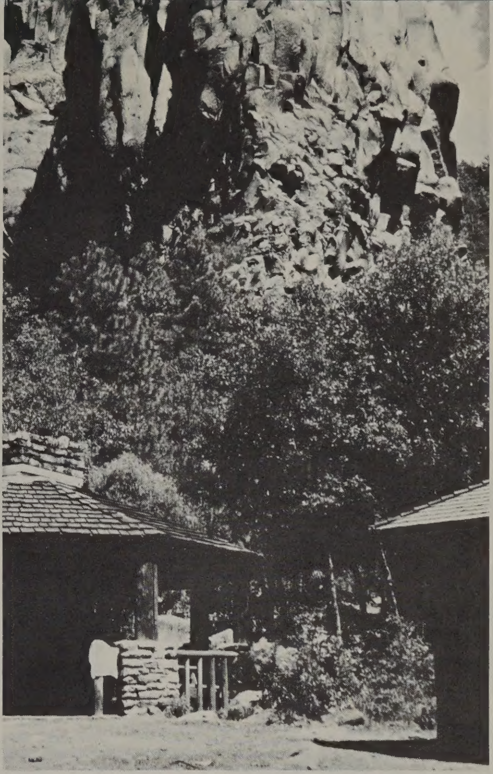
New Mexico's geologic past is revealed in such formations as (left to right) Cabezon Peak, the neck of an eroded volcano; an extinct volcanic crater near Grants; spectacular Carlsbad Caverns, and imposing Battleship Rock jutting sharply skyward near Jemez Creek.

Geologic History

The earliest geologic history of New Mexico is recorded by ancient foliated and banded rocks, intensely deformed and altered from their original composition and invaded by great masses of molten rock that hardened into granite. These oldest rocks are exposed to view chiefly in the cores and in the steep barren fronts of the north-south trending ranges in the central part of the State, but also in many areas ranging from a few acres to tens of square miles in the southwestern part. They are nearly devoid of the fossils that are the geologists' time markers and many details of this primeval period are still unknown.

Beginning about 600 million years ago beds belonging to the oldest era of fossil-bearing rocks were deposited during repeated invasions of seas that spread widely across the State from south to north. In these seas lime muds, silts, and fine-grained sands were laid down and now form extensive superimposed sheets of gray and drab-colored rocks. Toward the close of this oldest era of fossil-bearing rocks, the ancestral Rocky Mountains began their rise in the northern part of the State and quantities of red and gray mud, sand, and cobble and bounder beds were washed away by streams from the rising highlands to form deposits laid down under flood plain and marginal marine conditions. In the southeastern part of the State truly marine conditions continued to prevail. Among the deposits was the huge limestone reef mass of the Capitan escarpment, the host rock from which Carlsbad Caverns were later to be dissolved by percolating ground waters. Within the basin partly enclosed by the reef, thousands of feet of salts, including valuable potash salts and other evaporite deposits, were laid down layer by layer in the closing stages of the era.

Subsequently, red muds and thick sheets of windblown sand swept widely over the State to inaugurate the middle era of its geologic history, beginning a little more than 200 million years ago. These deposits were followed by deposits of gypsum, limestone, and the vari-colored muds, sands, and boulder beds in which the State's rich deposits of uranium locally accumulated. The white, red, and other brilliantly hued cliffs of this period contribute much



to the spectacular scenic beauty of the State. Superposed on these rocks are the beds laid down during a great marine submergence when seas flooded into the southwestern part of the State from the Pacific Ocean, into the southeastern part from the Gulf of Mexico, and into the north from the Arctic Ocean. Thousands of feet of lime muds, chalk, clays, and sands were deposited in these intermittently subsiding seas. Beds of coal were formed in marginal flood plains, chiefly in the western and north-central parts of the State, where they provide a valuable energy resource. When the seas finally withdrew below the thick deposits of coarsening sediment washed by streams from the rising ranges of the Rocky Mountains, the middle era of New Mexico geologic history was drawing to its close.

Uplift continued, however, into the third major era when the so-called Tertiary rocks were deposited. In the latter part of this era the earth's crust was warped, folded, and broken by the deformations that chiefly shaped the present framework of mountain ranges of the State. In part contemporaneously and in part somewhat later a period of great volcanic activity began in the western and northeastern parts of the State. Molten lava poured up through hundreds of conduits that formed the necks of active volcanoes, thick piles of volcanic ashes accumulated around them, and great flows of lava of varied composition poured out for miles from the volcanic cones. Uplift continued and in its later stages became a broad regional rise of the western two-thirds of the State. From this higher land great sheets of gravel and sand were swept eastward by streams and rivers. These sheets of sediment underlie the nearly featureless expanses of the High Plains of eastern New Mexico.

Thus the third era of geologic time drew toward its close. Streams coursing westward and eastward over the uplifted land began to carve downward into their present courses, shaping the infinitely varied landscape of New Mexico from the rocks of varied hue, form, and resistance into which they cut their way. Only the highest ranges of the northern part of the State were lightly carved by the mountain glaciers of the last ice age, but volcanic activity continued. Almost into historic time, streams of basalt poured down the floors of the valleys and into low-lying plains near Carrizoso, Grants, Capulin, and elsewhere.

Now the land is quiet except for the slow wearing down of the channels by flowing streams and the frequent, though now not severe, earthquake shocks hint at the slumbering forces that have given the State the long and complex history recorded in its rocks.

Parks and Recreation

New Mexico's dry sunny climate and varied topography rich in scenic delights make the State a recreation paradise, providing activities to suit practically every taste. Hunting and fishing are found in most sections of the State and, while little snow falls in the valleys, mountain areas offer excellent skiing during the winter months. Traveling just a few hours from the mountains brings one to multicolored sun-drenched desert playgrounds.

Strange shapes and forms are to be seen here, austere and startling—even awesome—and yet full of enchantment. Nature in New Mexico shows all her varied faces. From the high forested mountains in the north to the dry desert regions in the south, beauty and age blend to create the particular qualities that make New Mexico a most appealing State.

Giant yuccas and other desert vegetation loom against the backdrop of the Organ Mountains. The tall yuccas grow in profusion near Las Cruces and near Deming.

The White Sands in southern New Mexico are unique among the national monuments in

Recreation takes many forms in New Mexico. The slopes of Santa Fe Basin attract skiers from all over the Southwest; national forests offer excellent camping, and areas such as Bottomless Lakes State Park mean swimming and sunning.

the country. The area comprises the largest deposit of pure gypsum to be found anywhere in the world and this deposit creates a fabulous natural playground. "Playday" is designated annually, when local people and visitors alike turn out to enjoy a day of fun at this mammoth picnic grounds. Elephant Butte Lake is a favorite water sport region offering fine fishing and boating. The attractions of the Sacramento Mountains, near Cloudcroft, are other examples of New Mexico's diversified recreational opportunities.

New Mexico contains many sparkling new golf courses. With the exception of the northern mountainous areas of the State, golfing is a year-round game.

Perhaps these and other recreational opportunities account for the fact that tourism is considered the second largest industry in the State. In a recent year, New Mexico's income from 5 million tourists was over $200 million.

Game can be found in abundance and in great variety. There are thousands of square miles of unspoiled mountain forests. Near-primitive, remote villages have recreational opportunities readily available to the hunter and fisherman. There are also other areas easily accessible near more populated centers. The State game and fish department manages 31 wildlife refuges, 4 with major recreation value, containing 109,507 acres.

Of the State's 77.8 million acres, approximately 35 percent—27.5 million acres—are in Federal ownership. The National Park System of the Department of the Interior in New Mexico includes 1 national park totaling 45,847 acres, with a recent annual attendance of 573,000, and 9 national monuments comprising 190,716 acres with attendance at 1,127,000. Two are scientific—Capulin and White Sands; the others are historic monuments.

Information tables listing major Federal, State, and local recreation areas in New Mexico and a location map appear at the end of this chapter. The acreage, type of visitor use, and outdoor activities available at the various parks, forests and recreation sites can be found on the tables.

The Forest Service of the Department of Agriculture administers 7 national forests with an acreage of 8,565,190. This includes 143 recreation sites of 1,860 acres and 7 wilderness areas comprising 977,880 acres.

The Fish and Wildlife Service of the Department of the Interior administers 4 wildlife refuges of 140,334 acres, and Federal water-control projects account for 9 Federal recreation areas totaling 453,334 acres.

Developed campsites are located in five national forests and four national monuments. Some Indian reservations also have camping facilities. Water availability can be a problem in some areas of New Mexico, and campers should carry their own supply of water whenever they leave a major city.

National Park Areas

New Mexico offers canyonlands, open prairie, and desertland, and irrigated valleys—a contrasting terrain which provides scenic interest and recreation value. Significant segments of New Mexico's rich prehistoric, historic, and scenic assets are preserved as units of the National Park System and afford inspiration and enjoyment to hundreds of thousands of Americans annually.

Carlsbad Caverns National Park is located in the foothills of the Guadalupe Mountains in the southeastern part of the State. The area was originally set aside as a national monument to preserve Carlsbad Caverns, one of the world's most majestic caverns. It was later enlarged to preserve the other important caves and given national park status.

The park also possesses part of a magnificent exhumed fossil reef and a large colony of Mexican free-tailed bats which inhabit a portion of Carlsbad Caverns. Great hordes of these bats fly out of the cave entrance each evening during the summer for a night of foraging. The bat flight is one of the park's greatest attractions. The park can be reached by U.S. 62–180 from Carlsbad and El Paso.

Fort Union National Monument contains the ruins of the key fort that shaped the destiny of the Southwestern United States, 1851–91. Located on the Santa Fe Trail, in a region full of frontier history and romance, this fort was a base for both military and civilian adventures. Among our Nation's foremost soldiers and frontiersmen who served at Fort Union or stopped there were Generals Grant, Sherman, Bragg, Burnside, Longstreet, Pope, Sibley, Cooke, Carleton; Cols. Kit Carson and E. R. Canby; and Ceran St. Vrain and Lucien Maxwell. The monument includes both the original site (later known as the arsenal) on the west side of Coyote Creek and the more recent large fort on the east bank; the two areas total 720 acres. They can be reached from U.S. 85 north of Watrous, N. Mex.

Gran Quivira National Monument preserves the site of a 17th-century Spanish mission and contains 21 ruined house mounds of Indian pueblos and ruins of 2 mission churches. In addition to Pueblo Indian remains, there are traces of an Apache group, nomadic people who alternately traded with and attacked the sedentary Indians. The Apaches are the only aboriginal people still in the region; they live on the Mescalero Reservation, 50 miles distant. It contains 611 acres of Federal lands. The monument can be reached from Mountainair, N. Mex., on U.S. 60, over State Route 10, a distance of 25 miles.

White Sands National Monument contains one of the world's strangest and most amazing deserts, with huge gypsum dunes of purest white. The monument, comprising nearly 230 square miles, is located in south-central New Mexico. The monument is a wildlife preserve; all plants and animals are protected and must not be harmed or disturbed. White Sands is located on U.S. 70.

Gila Cliff Dwellings Monument has well-preserved cliff dwellings in natural cavities in the face of an overhanging cliff. This national monument is accessable by a new road replacing the former jeep trail leading to it. It is located close to Silver City in the southwest corner of the State.

National Monuments

Aztec Ruins National Monument contains the ruins of a great prehistoric American Indian town built of masonry and timber in the 12th century. It furnishes an excellent example of

Bandelier National Monument near Santa Fe contains ruins of the remarkable cliff dwellings of prehistoric Indians.

classical pueblo construction. The name "Aztec" was applied to the ruins by early settlers from the United States who had a mistaken idea of the ancient builders. Actually, the pre-Spanish inhabitants were Pueblo Indians and were not related to the Aztec Indians of Mexico. An area of 27 acres has been set aside for the protection of the ruins. The monument can be reached from north, east, and west on U.S. 550.

Bandelier National Monument, a wilderness area crossed only by trails, covers more than 48 square miles. The monument contains the ruins of prehistoric Indian homes of the later Pueblo period and is located on the canyon-slashed slopes of the Pajarito Plateau—a spectacular setting characterized by tan cliffs, forested mesas, and deep gorges. Ninety percent of Bandelier National Monument is, and will remain, a wilderness. The back country is accessible by approximately 30 miles of maintained trails. The monument, 46 miles west of Santa Fe, is reached on U.S. 285 to Pojoaque, then west on State Route 4.

Capulin Mountain National Monument has as its main feature a symmetrical cinder cone, an interesting example of an extinct volcano. From the highest point of its crater rim, you can see parts of five States—New Mexico, Texas, Oklahoma, Kansas, and Colorado. Westward, the view is particularly magnificent. The majestic, snowcapped peaks of the Sangre de Cristo Mountains form a mighty background to the wide expanse of grass-carpeted rangeland, broken by volcanic hills and mesas. The monument contains 680 acres and the main entrance is on State Route 325.

Chaco Canyon National Monument contains 13 major Indian ruins which are without equal in the United States and constitute the climax of prehistoric Indian architecture north of the Valley of Mexico. There are also hundreds of smaller archeological sites. It is difficult to omit superlatives when describing the ruins at Chaco Canyon. Not only are the pueblos among the largest in the Southwest, but the masonry of the walls is superior to that of any other district. In many respects, Chaco can be said to have been the cultural center of the prehistoric Southwest in its day. The monument covers nearly 34 square miles and is located in San Juan and McKinley Counties, and is accessible via the newly completed Navajo Route 1.

El Morro National Monument contains "Inscription Rock," a soft sandstone monolith on which are carved hundreds of inscriptions, including those of early Spanish explorers and early American immigrants and settlers. Carved on the rock itself are also hundreds of petroglyphs left by the ancient people. The monument covers about 2 square miles and can be reached from Gallup or Grants, N. Mex.

National Forest Recreation

The 9,885,622 acres of national forests in New Mexico welcome the visitor with a rich variety of scenic splendor and a wide range of recreational opportunities. Here, with our steadily mounting leisure time, longevity, and mobility, come America's recreationists to camp, hunt, fish, hike, ski, or just plain "sightsee."

The following list of the national forests in New Mexico gives location, gross acreage, wilderness area, and recreational highlights. Forest acreage used for recreation is shown on the tables at the end of this chapter.

Apache, mainly in Arizona, has a New Mexican acreage of only 649,515, of which 26,598 acres are in the Blue Range Primitive Area. The forest headquarters are in Springerville, Ariz.

Carson, with headquarters in Taos, has an acreage of 1,507,360, much of it in the scenic Sangre de Cristo Mountains (elevation: 6,000 to 13,000 feet). High point of this forest (and of the State of New Mexico) is the 13,160-foot Wheeler Peak, which is surrounded by a 6,051-acre wild area of the same name. There are 3 winter sports areas—Red River, Sipapu, and Taos Ski Valley.

Cibola has a gross acreage of 2,111,644 and is composed mostly of widely scattered mountain ranges rising from the desert in central and western New Mexico. Its headquarters are located in Albuquerque, and it includes campsites, picnic areas, and 1 ski area—the LaMadera.

Coronado lies almost wholly within the State of Arizona and its headquarters are in Tucson. However, 72,492 of this forest's acres lie over the State line in New Mexico, where there is found exceptional opportunity for fine hunting.

Gila is a vast 2,787,373-acre area of rugged mountainous land in southwestern New Mexico, very little affected by civilization. Largest forest in the State, it contains the Black Range Primitive Area (169,984 acres), the Gila Primitive Area (132,788 acres), and the Gila Wilderness Area (438,626 acres). These primitive and wilderness areas are favorite sites for pack trips, organized hikes, and horseback rides. There are beautiful trout streams and excellent big game hunting and the forest includes campsites and picnic grounds. Headquarters are located in Silver City.

Lincoln, renowned as the birthplace of Smokey Bear, covers 1,270,570 acres, including the White Mountain Wild Area of 28,230 acres. Hunting, fishing, and horseback riding are favored recreational activities, and there are magnificently scenic hiking trails through the White Mountains and the Guadalupe Mountains. The forest includes one ski area (Cedar Creek). Headquarters are in Alamogordo.

Santa Fe, with headquarters located in the town of the same name, includes 1,485,901 acres, much of it in the southern Sangre de Cristo Range. Included is the San Pedro Parks Wild Area, of 41,132 acres, and the famous Pecos Wilderness Area (165,000 acres) embracing the headwaters of the Pecos River and containing saddle and hiking trails and unexcelled big game hunting. Here also may be found living Indian pueblos, Spanish missions, cliff dwellings, and ancient ruins, as well as the famous Santa Fe Ski basin.

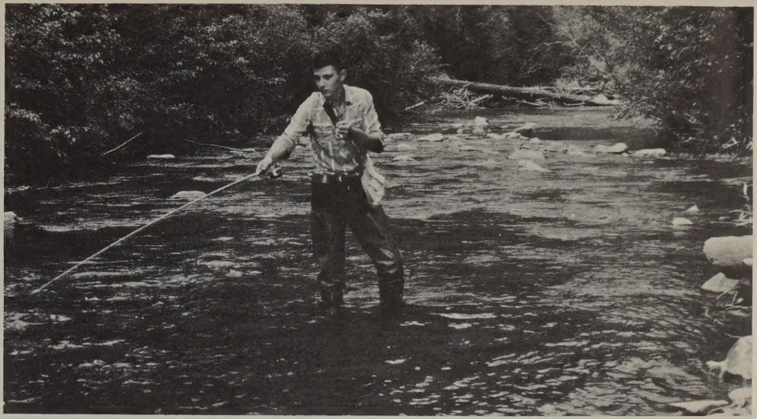
National Grasslands

The Panhandle National Grasslands are permanently held by the Department of Agriculture as a part of the National Forest System for administration under title III of the Bankhead-Jones Farm Tenant Act. The Panhandle covers about 300,000 acres and is made up of five individual grasslands of which the 133,183-acre Kiowa National Grassland in New Mexico is one.

The Kiowa, like other grasslands in the Panhandle, furnishes forage, cover and water for wildlife and livestock, and is open to the public for hunting, recreation, and other uses.

State Parks and Monuments

In addition, the New Mexico State Park Commission administers 12 State parks totaling 5,344 acres, with over 1 million visitors. Further, the commission is responsible for enforcement of the safety provisions of the State Boat Act of 1959 on the 34 so-called boatable waters of the State, total area 58,605 acres. Three State parks—Bluewater Lake, Conchas Dam, and Storrie Lake—abut on three lakes, included in those boatable waters. The State has recreational use rights on the surface waters. Other State parks are Oasis, Pancho Villa, Santa Fe River, Kit Carson Memorial, Hyde Memorial, City of Rocks, and Bottomless Lakes.



Fishing in a cool wooded stream is one of the delights for visitors to Carson National Forest.

These parks include various camping, picnicking, and fishing areas.

The New Mexico State Museum has six monuments of 678 acres under its jurisdiction. The monuments are Abo, Coronade, El Palacio, Jemez, Pecos, and Quarai. The State highway department has 240 waysides—116 with picnic tables. County and local areas consist of two parks of 9,260 acres and three recreation areas of 1,330 acres. Also, there are 24 Indian reservations which, as private lands, offer recreation opportunities and tourist attractions.

Recreation at Reservoirs

In New Mexico, as in other areas, Bureau of Reclamation reservoirs during recent years have been assuming increasing importance for recreational use. Visitor-days on recreation areas of Reclamation projects in New Mexico now exceed 1,500,000. Boating, waterskiing, and fishing are important parts of this activity. These areas are less important for waterfowl hunting, but the areas draw hunters. Water surface of these reservoirs totals 39,262 acres.

Existing projects generally were constructed before recreation values of reservoirs were apparent. Consequently, authorizing legislation did not provide for construction of recreation facilities adequate to meet present and future public-use pressures.

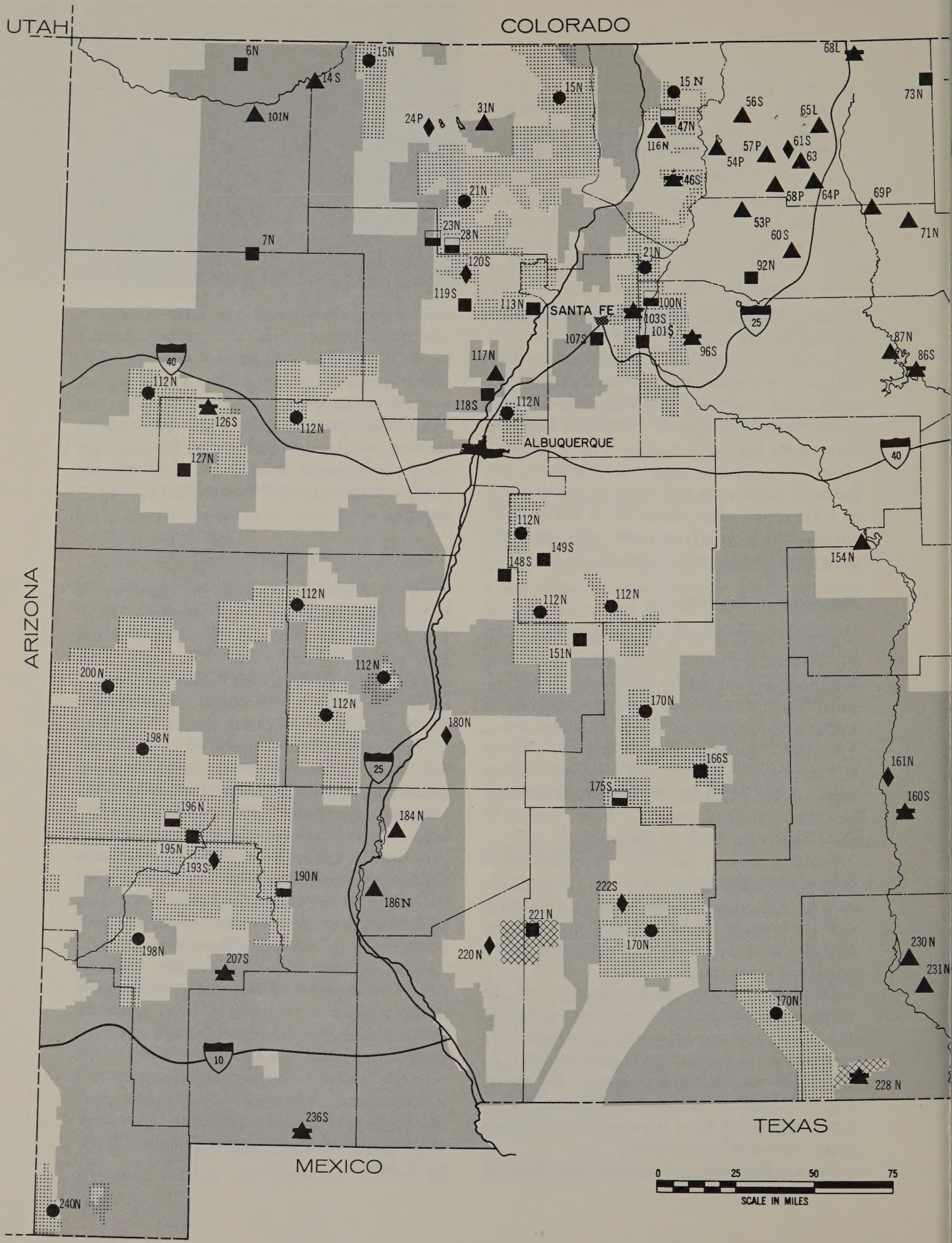
The Congress has taken cognizance of the value of Reclamation reservoirs for recreation, and project authorizing acts in recent years have provided funds for recreation development. In addition, some of the older projects are receiving attention in this respect. Additional recreation facilities are to be constructed at Elephant Butte and Caballo Reservoirs.

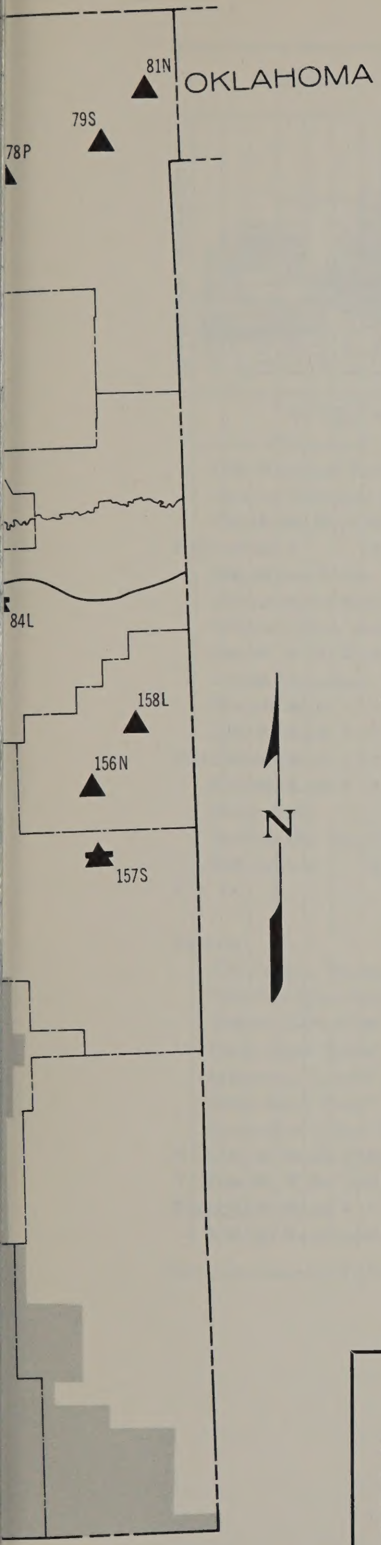
Navajo Reservoir on the San Juan River in northwestern New Mexico is now under construction as one of the principal storage features of the Colorado River storage project. The authorizing act for this project provided that adequate consideration be given to recreation and wildlife potentials, and public-use facilities are now being constructed by the National Park Service. Fish and wildlife development has been evaluated by the Bureau of Sport Fisheries and Wildlife.

Privately Owned Recreation Facilities

Privately owned recreation facilities are of major importance in New Mexico. These vary from resident summer camps for boys and girls to fine hunting areas. The State's crop and pasture lands contribute significantly to the supply of outdoor recreation opportunities. Many operate as vacation farms, accepting tourists who live at the farm or ranch during their stay. Others lease or supply hunting opportunities, often in combination with cabin facilities. Camping, picnicking, fishing, hiking, horseback riding, and guide services are provided by some. Many lease or sell scenic sites for home and camp lots.

Lists of all the privately operated recreation opportunities in New Mexico are not available from any single source. Travel bureaus and agencies, commercial organizations such as gasoline companies, motel and hotel associations, airlines and railroads, local chambers of commerce, and outdoor clubs and organizations all can supply information on many of the privately owned facilities. Local inquiry will reveal others. Information is available from the Tourist Division, New Mexico Department of Development, State Capitol Building, Santa Fe, N. Mex.


UTAH
COLORADO
ARIZONA
TEXAS
MEXICO
SANTA FE
ALBUQUERQUE
6N
15N
14S
101N
24P
31N
15N
15 N
47N
116N
46S
56S
65L
61S
57P
54P
63
58P
64P
68L
73N
69P
71N
53P
60S
92N
21N
7N
23N
28N
120S
21N
119S
113N
100N
103S
101S
96S
107S
25
87N
86S
40
112N
126S
112N
117N
118S
112N
127N
40
154N
112N
149S
148S
112N
112N
112N
151N
112N
200N
112N
170N
180N
112N
198N
166S
25
161N
175S
160S
196N
184N
195N
193S
190N
186N
222S
221N
198N
220N
170N
230N
207S
231N
170N
10
228 N
236S
240N
0
25
50
75
SCALE IN MILES



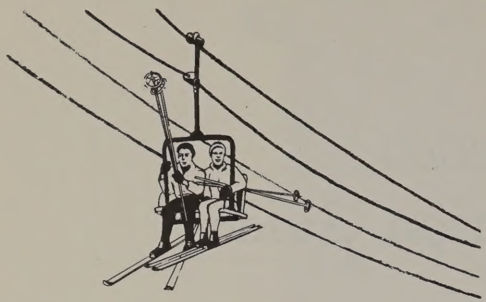
New Mexico Outdoor Recreation Guide

Park	★	Wilderness	⬓
Recreation Area, Etc.	▲	Wildlife Area	♦
Monument	■	Forest	●

NATIONAL PARK	▩
NATIONAL FOREST	░
THE PUBLIC LANDS	▒

HOW TO USE THIS GUIDE

Symbols on the map below represent major areas, listed on the following pages, which offer recreation in New Mexico. Each area may be located on the map by matching its number (as 228N) with the number beside the map symbol. Letters in the number refer to Federal (N), State (S), local (L), and quasi-public and private (P). Only major interstate highways and major cities are shown on the map. A more detailed road map can provide exact locations for those areas you may wish to visit.



	Number on map	Acreage		Type of use				Activities									
		Total land and water within area	Water surface (7)	Day and weekend	Vacation	Out-of-State target	Tourist en route	Picnicking	Hiking and riding	Camping	Boating	Swimming	Fishing	Hunting	Nature study	Winter sports	Wilderness experience
FEDERAL																	
Park: Carlsbad Caverns National Park	228N	45, 846	....	..	..	x	x	x	x	..	..	..	..	..	x	..	..
Recreation areas:																	
El Vado Reservoir	31N	14, 000	3, 000	..	x	..	x	x	x	x	x	x	x	x	x	..	..
Mills Canyon Unit Land Utilization Area	71N	160, 000	....	x	..	..	x	x	x	x	..	..	x	x	x	..	..
Union County Unit Land Utilization Area	81N	180, 000	....	x	..	..	x	x	x	..	..	..	..	x	x	..	..
Conchas Dam and Reservoir	87N	11, 081	9, 600	x	x	..	x	x	x	x	x	x	x	..	x	..	..
Jemez Canyon Reservoir	117N	....	S	x	..	..	x	x	..	..	..	..	..	..	x	..	..
Alamogordo Reservoir	154N	9, 850	4, 650	..	x	..	x	x	x	x	x	x	x	x	x	..	..
Curry County Unit Land Utilization Area	156N	5, 000	....	x	..	..	x	x	x	..	..	..	..	x	x	..	..
Elephant Butte Reservoir	184N	40, 096	17, 000	x	x	..	x	x	x	x	x	x	x	x	x	..	..
Caballo Reservoir	186N	11, 532	6, 734	x	..	..	x	x	x	x	x	x	x	x	x	..	..
McMillan Reservoir	230N	21, 775	5, 100	x	..	..	x	x	x	x	x	x	x	x	x	..	..
Avalon Reservoir	231N	....	1, 000	x	x	..	x	x	x	x	x	x	x	x	x	..	..
Monuments:																	
Scientific:																	
Capulin Mountain National Monument	73N	680	....	..	x	x	x	x	x	x	..	..	..	..	x	..	..
White Sands National Monument	221N	140, 247	....	x	..	x	x	x	x	..	..	..	..	..	x	..	x
Historic:																	
Aztec Ruins National Monument	6N	27	....	..	..	..	x	..	..	..	..	..	..	..	x	..	..
Chaco Canyon National Monument	7N	20, 989	....	..	x	x	x	x	x	x	..	..	..	..	x	..	..
Fort Union National Monument	92N	720	....	x	..	x	x	x	x	..	..	..	..	..	x	..	..
Bandelier National Monument	113N	27, 049	....	x	x	x	x	x	x	x	..	..	..	..	x	..	..
El Morro National Monument	127N	881	....	..	x	x	x	x	x	x	..	..	..	..	x	..	..
Gran Quivira National Monument	151N	611	....	x	..	..	x	x	..	..	..	..	..	..	x	..	..
Gila Cliff Dwellings National Monument	195N	160	....	..	x	x	x	..	x	x	..	..	..	..	x	..	..
Forests:																	
Carson National Forest	15N	1, 225, 408	457	x	x	..	x	x	x	x	x	x	x	x	x	x	x
Santa Fe National Forest	21N	1, 233, 419	455	x	x	..	x	x	x	x	..	x	x	x	x	x	x
Cibola National Forest	112N	1, 690, 738	14	x	x	..	x	x	x	x	x	..	x	x	x	x	x
Lincoln National Forest	170N	1, 087, 909	42	..	x	..	x	x	x	x	..	..	x	x	x	x	..

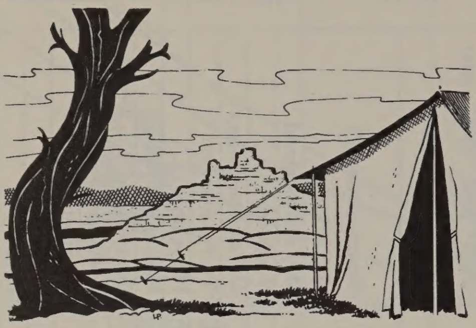
See footnotes at end of table.

Picnickers relax at a campground in scenic Lincoln National Forest.

	Number on map	Acreage		Type of use				Activities									
		Total land and water within area	Water surface (7)	Day and weekend	Vacation	Out-of-State target	Tourist en route	Picnicking	Hiking and riding	Camping	Boating	Swimming	Fishing	Hunting	Nature study	Winter sports	Wilderness experience
FEDERAL —Continued																	
Forests—Continued																	
Gila National Forest	198N	2, 715, 706	581	..	x	..	x	x	x	x	..	x	x	x	x	x	x
Apache National Forest	200N	542, 443	5	..	x	..	x	x	x	x	..	..	x	x	x	..	x
Coronado National Forest	240N	69, 567	S	..	x	..	x	x	..	x	..	..	..	x	..	..	x
Wilderness:																	
San Pedro Parks	23N	41, 132	S	..	x	..	x	..	x	x	..	..	x	x	x	..	x
Monument Canyon Area	28N	640	....	..	x	..	x	..	x	x	..	..	x	x	x	..	x
Wheeler Peak Area	47N	6, 000	S	x	x	..	x	x	x	x	x	..	x	x	x	x	x
Pecos	100N	165, 000	S	x	x	x	x	..	x	x	..	..	x	x	x	..	x
White Mountain	175N	28, 118	S	..	x	..	x	..	x	x	..	..	x	x	x	..	x
Black Range	190N	169, 000	....	..	x	x	x	..	x	x	..	..	x	x	x	..	x
Gila 1 and 2	196N	567, 990	....	..	x	x	x	..	x	x	..	..	x	x	x	..	x
Wildlife areas:																	
Burford Lake	24N	1, 845	900	..	x	..	x	x	x	x	x	..	x	x	x	..	..
Bitter Lake	161N	24, 083	100	x	..	..	x	x	x	..	..	..	x	..	x	..	..
Bosque Del Apache	180N	57, 191	S	x	..	..	x	x	x	x	..	..	x	x	x	..	..
San Andres	220N	57, 215	....	x	..	..	x	x	x	x	..	..	..	x	x	..	..
STATE																	
Parks:																	
Kit Carson Memorial State Park	46S	19	....	x	x	..	x	x	..	..	..	..	..	..	x	x	..
Conchas Dam State Park	86S	12, 240	9, 600	x	x	..	x	x	x	x	x	x	x	..	x	..	..
Storrie Lake State Park	96S	1, 084	1, 000	x	x	..	x	x	x	x	x	..	x	..	x	..	..
Hyde State Park	103S	1, 135	....	x	x	..	x	x	x	x	..	..	..	..	x	x	..
Bluewater Lake State Park	126S	3, 900	3, 500	x	x	..	x	x	x	x	x	x	x	..	x	..	..
Oasis State Park	157S	160	....	x	..	..	..	x	..	..	..	..	..	..	..	..	..
Bottomless Lakes State Park	160S	1, 611	30	x	x	..	x	x	x	x	x	x	x	..	x	..	..
City of Rocks State Park	207S	680	S	x	x	..	x	x	..	..	..	..	..	..	x	..	..
Pancho Villa State Park	236S	34	....	..	..	..	..	x	..	..	..	..	..	..	x	..	..
Recreation areas:																	
Navajo Reservoir	14S	18, 100	15, 600	..	x	..	x	x	x	x	x	..	x	..	x	..	..

See footnotes at end of table.

Riders take to a high wilderness trail in Santa Fe National Forest.

	Number on map	Acreage		Type of use				Activities									
		Total land and water within area	Water surface (1)	Day and weekend	Vacation	Out-of-State target	Tourist en route	Picnicking	Hiking and riding	Camping	Boating	Swimming	Fishing	Hunting	Nature study	Winter sports	Wilderness experience
STATE —Continued																	
Recreation areas —Continued																	
Cimarron Canyon	56S	33, 324	....	x	x	..	x	x	x	x	..	..	x	x	x	..	..
Wagon Mound Lake	60S	737	S	x	..	..	x	x	..	x	..	..	x	..	x	..	..
Clayton Lake	79S	200	160	x	..	..	x	x	x	..	..	..	x	x	x	..	..
Monuments: Historic:																	
Pecos State Monument	101S	80	....	x	..	..	x	x	..	..	..	..	..	..	x	..	..
El Palacio State Monument	107S	1	....	x	..	..	x	..	..	..	..	..	..	..	..	..	..
Coronado State Monument	118S	640	....	x	..	..	x	x	..	..	..	..	..	..	x	..	..
Jemez State Monument	119S	1	....	x	..	..	x	x	..	..	..	..	..	..	x	..	..
Abo State Monument	148S	20	....	x	..	..	x	x	..	..	..	..	..	..	x	..	..
Quarai State Monument	149S	15	....	x	..	..	x	x	..	..	..	..	..	..	x	..	..
Lincoln County Courthouse	166S	1	....	..	..	..	x	x	..	..	..	..	..	..	x	..	..
Wildlife areas:																	
Stubblefield Lake	61S	6, 160	982	..	..	..	..	x	..	..	..	x	x	x	..	x	..
Fenton Lake	120S	300	37	x	..	..	..	x	x	x	x	..	..	x	x	x	..
Heart Bar Ranch	193S	93, 000	S	..	..	..	..	x	..	..	x	..	..	..	x	..	..
Cloudcroft	222S	4, 480	S	x	..	..	..	x	x	x.	x	..	..	x	x	..	..
MAJOR LOCAL																	
Parks:																	
Sugarite Canyon	68L	9, 000	....	x	..	..	x	x	..	x	..	x	x	..	x	..	..
Tucumcari Metropolitan Park	84L	260	....	x	..	..	x	x	..	..	..	x	..	..	x	.	..
Recreation areas:																	
Stubblefield Reservoir	63L	....	982	x	..	..	x	x	x	x	x	..	x	..	x	..	..
Reserve No. 13	65L	330	326	x	..	..	x	x	x	x	x	..	x	..	x	..	..
Running Water Draw	158L	....	....	x	..	..	x	x	..	x	..	..	..	..	x	..	..
MAJOR QUASI-PUBLIC AND PRIVATE																	
Recreation areas:																	
Black Lake	53P	....	70	x	..	..	x	x	x	x	x	..	x	..	x	..	..
Eagle Nest Lake	54P	1, 832	1, 400	x	x	..	x	x	x	x	x	..	x	x	x	x	..
Philmont Scout Ranch	57P	127, 000	....	x	x	x	x	x	x	x	..	x	x	x	x	..	..
Miami Reservoir	58P	....	190	x	..	..	x	x	x	x	x	..	x	..	x	..	..
Springer Lake	64P	500	450	x	..	..	x	x	x	x	x	..	x	..	x	..	..
Abbott Lakes	69P	....	36	x	..	..	x	..	..	x	x	..	x	..	x	..	..
Snyder Lake	78P	30	20	x	..	..	x	x	x	x	x	..	x	..	x	..	..
FEDERAL—PUBLIC LANDS (2)																	
Angel Peak Recreation Site	101N	300	....	x	..	..	..	x	x	x	..	..	..	..	x	..	..
Rio Grande Gorge Recreation Area	116N	31, 000	500	x	x	x	x	x	x	x	..	..	x	x	x	..	x

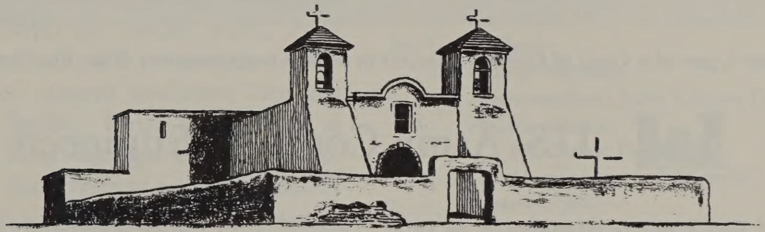
---

Footnotes:

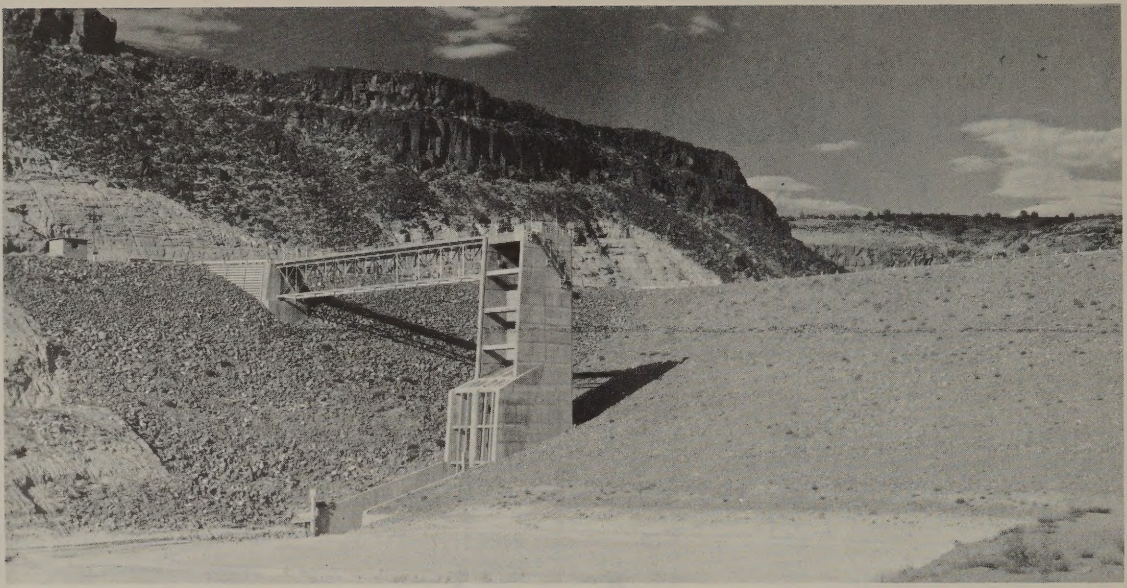
(1) *Where water surface acreage is not shown:* "S" *indicates water area under 500 acres; where land or water acreage is not listed, it has not been determined.*

(2) *Recreation areas on lands administered by the Department of the Interior's Bureau of Land Management.*

Programs of Federal Natural Resource Agencies



The wise use and protection of New Mexico's varied natural resources have long been the concern of the natural resource agencies of the Federal Government. The following pages describe some of these programs and interests. Full information can be obtained by contacting the offices noted in this section.



Jemez Canyon Dam is part of a Corps of Engineers' project to control water resources of the Rio Grande and tributaries.

U.S. Army Corps of Engineers

The Corps of Engineers is engaged in an important water-resources program in New Mexico. Two projects have been completed and are now in operation. These are Conchas Dam and Reservoir on the Canadian River and Jemez Canyon Dam and Reservoir on the Jemez River, a tributary of the Rio Grande. Three major projects are under construction at the present time. These are the Abiquiu Dam on Rio Chama, a tributary of the Rio Grande; Two Rivers Dam on the Rio Hondo, a tributary of the Pecos River; and the Rio Grande Floodway. The portion of the Rio Grande Floodway designed to afford protection to the city of Albuquerque and its environs has been completed. Preconstruction planning is underway for several other flood control projects in the State and for some of them has reached an advanced stage which would allow construction to be started in the near future, other considerations permitting. Also, a number of surveys have been authorized to investigate the feasibility of additional improvements for the prevention of flood damages in New Mexico. Completion of the projects under construction, detailed design of authorized projects, and comprehensive planning for future water-resources development in New Mexico will proceed in accordance with congressional authorization and appropriations.

Although the U.S. Army Corps of Engineers is primarily engaged in the planning and construction of improvements for flood control, close coordination with other Federal and State agencies and local groups is maintained in planning the orderly development of the State's water resources in harmony with changing economic conditions. Needs considered include flood control, water conservation, major drainage, hydroelectric power, municipal and industrial water supply, pollution abatement, the preservation of fish and wildlife, and recreational development. Navigation is not practicable on any of the streams in New Mexico.

Investigations and improvements for flood control and allied purposes are never initiated by the U.S. Army Engineers. At the request of local citizens through their congressional delegates, Congress authorizes the programs which are supervised by the Chief of Engineers, U.S. Army, under the direction of the Secretary of the Army.

The Corps of Engineers also has been assigned, by Congress, the responsibility of prescribing regulations for the use of flood control storage capacity in reservoirs constructed by other agencies, wholly or in part with Federal funds. Although there have been no flood control regulations specifically prescribed for any such reservoirs in New Mexico, evaluation studies have been completed on the flood control aspects of several reservoirs proposed for construction by the Bureau of Reclamation.

In addition to the foregoing activities, the Corps of Engineers is frequently called upon to perform emergency action before, during, and after floods, whether of a localized nature or of major national concern, especially when local agencies normally responsible are unable to cope with the situation. The Congress, through general and special laws, has authorized the expenditure of certain funds for rescue work, flood fighting, and the repair and restoration of levees and other flood control structures damaged or destroyed by floods. Close cooperation is maintained with local interests by periodic inspection of their flood control works to detect weaknesses and, in addition, maintenance methods are suggested to improve the degree of flood protection.

The water resources development program of the Corps of Engineers is logically on a watershed basis and, since New Mexico includes portions of several different watersheds, there are as many programs in the State. The Continental Divide passes entirely through New Mexico from north to south. About one-sixth of the State is on the western slope of the Divide in the watershed of the Colorado River. This watershed is under the jurisdiction of the Los Angeles District, which is in the South Pacific Division of the Corps of Engineers. That part of the State east of the Continental Divide falls within the Southwestern Division of the Corps of Engineers. This area is further apportioned among three districts. The Albuquerque District includes the watersheds of the Canadian River and a very small part of the Purgatoire River, both of which are tributary to the Arkansas River; and the Rio Grande and its major tributary, the Pecos River, which drain the entire central portion of the State. Also included are many closed basins such as the Tularosa Basin in south-central New Mexico and the Mimbres River basin in the southwestern part of the State. Tributaries of the Arkansas River, including the watersheds of the North Canadian and Cimarron Rivers in the northeast section, together with tributaries of the Canadian and Red Rivers which originate in New Mexico but which enter the main stems east of the New Mexico-Texas State line, comprise that part of New Mexico which falls within the Tulsa District. A relatively small part of southeastern New Mexico lies in the watersheds of the Colorado (Texas) and Brazos Rivers. These watersheds are in the Fort Worth District.

Projects in New Mexico

- Rio Grande Basin:
  - Rio Grande watershed:
    - *Project completed:* Jemez Canyon Dam and Reservoir.
    - *Projects underway:*
      - Rio Grande Floodway.
      - Abiquiu Dam and Reservoir.
    - *Authorized projects:*
      - Cochiti Dam and Reservoir.
      - Galisteo Dam and Reservoir.
      - Bluewater Floodway.
      - Albuquerque diversion channels project.
      - Socorro diversion channels project.
    - *Flood control operation—Project constructed by another agency:* Platoro Dam and Reservoir project.
  - Pecos River watershed:
    - *Project underway:* Two Rivers Reservoir project.
    - *Authorized projects:*
      - Los Esteros and Alamogordo Reservoirs project.
      - Artesia diversion channel.
      - Dark Canyon Floodway.
- Tularosa (closed) Basin: Survey underway.
- San Juan, Little Colorado, and Gila River Basins: Survey underway.
- Arkansas River Basin:
  - *Project completed:* Conchas Dam and Reservoir.
  - Survey authorized.
- Brazos and Colorado (Texas) River Basin: Surveys underway.

More detailed information on projects of the Corps of Engineers in New Mexico is available in a booklet titled "Water Resources Development by the U.S. Army Corps of Engineers in New Mexico." It may be obtained by writing the U.S. Army Engineer Division, Southwestern Region, 1114 Commerce Street, Dallas, Tex.

Fish and Wildlife Service headquarters for Hot Springs National Fish Hatchery are below Elephant Butte Dam.

Fish and Wildlife Service

The Fish and Wildlife Service cooperates with other Federal and State agencies to assure New Mexico the opportunity of reaping the full value of its fish and wildlife.

The Service has four national fish hatcheries, as well as four wildlife refuges described earlier, managed by the Bureau of Sport Fisheries and Wildlife. The Eagle Nest National Fish Hatchery, located in the northern part of the State adjacent to Eagle Nest Lake, is an egg-collecting station for rainbow trout with the majority of the eggs being shipped to other stations within the region. Usually, when conditions are favorable, one-half to three-fourths million eggs are hatched at the station and the resulting fry stocked in Eagle Nest Lake. A cooperative agreement is in force between the Fish and Wildlife Service and the Springer Land & Cattle Co., which owns the lake.

Santa Rosa National Fish Hatchery, located near the town of Santa Rosa, produces rainbow trout, largemouth black bass, channel catfish, and sunfishes. Recent output totaled 5,873 pounds of rainbow trout, 155,040 largemouth bass, 138,725 channel catfish, and 183,010 sunfish.

A major portion of the trout production is distributed to Indian reservation waters within the State of New Mexico and occasional deliveries to the Navajo Reservation in Arizona. Some trout are delivered to one lake in Oklahoma and several small lakes in southeastern Colorado. Warm water fishes are distributed to all of northern New Mexico, southeastern Colorado, and the Panhandle of Texas.

The Dexter National Fish Hatchery, located near the town of Dexter in the Pecos Valley area, produces warm water species. In a recent year, the production was 515,000 largemouth bass, 193,000 channel catfish, and 1,000 sunfish. The station distributes fish to all of the southern half of New Mexico, exclusive of the Elephant Butte irrigation project, and to the southeastern portion of Arizona and a part of southwest Texas. Hot Springs National Fish Hatchery, located below Elephant Butte Dam on the Rio Grande near the town of Truth or Consequences, produces rainbow trout, largemouth black bass, channel catfish, and sunfishes. Recent output was 7,568 pounds of trout, 17,285 bass, and 28,625 sunfishes.

A cooperative agreement is in force between the Fish and Wildlife Service, the U.S. Bureau of Reclamation, and the Water Users' Association. The land is part of the Bureau of Reclamation Elephant Butte project and electric power and water is provided free of charge to the hatchery for its operation.

The production of trout from that station is stocked in the Rio Grande between Elephant Butte and Caballo Lakes. Only catchable size fish are planted here. There are some small trout transferred to other areas. Practically all of the warm water fish produced in this station are stocked in Elephant Butte and Caballo Lakes and 600 miles of drain ditches between Elephant Butte Lake and a point approximately 60 miles east of El Paso.

Predatory Animal and Rodent Control

This cooperative program is conducted under Bureau of Sport Fisheries and Wildlife supervision for the protection of livestock, game, crops, forage, irrigation structures, and to curtail the incidence of wild-animal-borne diseases to which humans and valuable animals may be susceptible. It is financed jointly by the Federal Government, State of New Mexico, counties, and livestock associations. Predator and/or rodent control is conducted on specific Federal refuges, as requested, for the protection of resident game species and to prevent emigration of harmful species to outside areas.

Headquarters for the Branch of Predator and Rodent Control in the State of New Mexico is Albuquerque, and subdistrict offices are maintained at Las Cruces, Roswell, and Las Vegas, N. Mex. Predatory animal and rodent control field employees are located throughout the State.

The Branch of Management and Enforcement is responsible for the enforcement of Federal game laws, the collection of management data pertaining to migratory bird species, depredation control, and permit-management activities, along with public relations and administrative responsibilities. The principal migratory game bird species in New Mexico with which this Branch is concerned are mourning doves, band-tailed pigeons, sandhill cranes, and ducks and geese.

The functions of the Branch of Management and Enforcement are discharged by two U.S. game-management agents in New Mexico. The agent in charge is headquartered in the U.S. Courthouse at Albuquerque, and his assistant is located at Roswell. The New Mexico game-management agents hold State game law enforcement authority and participate in a cooperative program for game law enforcement and wildlife management with the personnel of the New Mexico Department of Game and Fish.

The program of the Branch of River Basin Studies in New Mexico has been concerned largely with the water development plans of the Bureau of Reclamation, with a lesser volume of planning activities coming from the Corps of Engineers, the Soil Conservation Service, private developments requiring licenses by the Federal Power Commission, and the granting of rights-of-way by the Bureau of Land Management. The State of New Mexico lies within the operational area of Branch of River Basin Studies field offices in Denver, Colo., and Salt Lake City, Utah.

All work is done in close cooperation with the New Mexico Department of Game and Fish, and is based upon the requirements and procedures set forth in the Fish and Wildlife Coordination Act; the Colorado River Storage Project and Participating Projects Act; the Watershed Protection and Flood Prevention Act; Federal Power Act; and appropriate section of part 244, title 43, Code of Federal Regulations.

Fishery Management Services

Programs for the development and management of sport fishing on Indian lands are the major activities of the Branch of Fishery Management Services in New Mexico. Active programs in fishery management are presently being conducted on 13 of the 23 Indian reservations in the State. These represent all Indian lands with sport fishing potential. Fishery management assistance is provided from the regional office, Bureau of Sport Fisheries and Wildlife, Albuquerque, and from the Branch district office in Gallup.

Besides creating more sport fishing for a greater number of people, the work of the Branch serves as a foundation for the establishment of recreational industries which provide tribal members with additional employment and income opportunities.

Waters on Indian reservations in New Mexico supported approximately 55,000 fishermen-days in a recent year. Sport fishing was provided on 715 surface acres of reservoirs and 30 miles of streams.

A large part of the work of the Branch of Fishery Management Services on Indian lands is concerned with the planning of new reservoirs, development of recreational facilities, and fishery biology leading to a balanced fish stocking-angler use relationship. Additional areas receiving fishery management assistance include national wildlife refuges, national parks and monuments, and military areas.

Further information on programs of the Fish and Wildlife Service in New Mexico may be obtained from the Regional Office, Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, Federal Building, 517 Gold Avenue SW., Albuquerque.

Foresters ride into wilderness areas of the national forests on horseback to check watershed conditions.

Forest Service

Over 10 million acres of forest and grassland within New Mexico are administered by the Forest Service of the U.S. Department of Agriculture.

Forest Service operations in New Mexico cover a tremendous range of activities, from maintenance of over a million acres of vast spectacular wilderness and more than one-third of the Panhandle National Grasslands, to the display of the minute 1¼-acre Beaver National Forest at Abiquiu, a model demonstration of the practical efficacy of multiple-use management.

Besides managing these Federal lands, the Forest Service cooperates with the State forester in programs for the protection and development of State and private lands, and conducts research in forestry, range management, and related fields.

National Forest Administration

There are five national forests in New Mexico (listed earlier in this book), and portions of two others which lie mostly in the State of Arizona—comprising a total gross acreage of 9,874,812. The regional forester at Albuquerque administers these national forests and the 133,183-acre Kiowa National Grassland, with headquarters at Amarillo.

Each national forest is under the direction of a forest supervisor and from four to eight district forest rangers. Each ranger is responsible for on-the-ground multiple-use management of a district from 150,000 to 400,000 acres in size.

The national forests, in general the coolest and best-watered areas in this arid land, are managed for a sustained yield of their many renewable resources—wood, water, forage, wildlife, and recreation—so as to benefit the greatest number of people now and for the years to come.

Nearly 3 million acres of commercial forest lie within the national forests of New Mexico, from which 83,381,000 board feet of timber, valued at $425,597, was cut in fiscal 1962. Forage for more than 231,000 cattle and 136,000 sheep is found in these national forests which also provide recreation for some 3.5 million visitors annually. During the past year, 33,000 big game animals were "harvested" from the national forests of New Mexico by hunters.

To assure that public lands will meet their full share of present and future public needs, the Forest Service has set up a "development program for the national forests," including plans for all of the renewable resources of the National Forest System to meet the expanding demands anticipated by 1972, and including long-term planning for the year 2000.

Projects scheduled for New Mexico under the development program include: tree-planting on 51,000 acres; construction of 1,000 campgrounds and picnic areas; improvement and development of small and big game range on 98,000 acres, 190 miles of streams, and 1,000 acres of lakes; revegetation of 424,691 acres of rangeland; construction of 2,730 miles of fence and 1,220 water developments; control erosion on and stabilize 302,000 acres and 2,200 miles of gullies and roads; reduce hazardous fuels on 63,000 acres for forest fire protection; construct 75 heliports and helispots; construct 2,172 miles of multipurpose roads and 250 miles of trails.

State and Private Cooperation

The regional forester cooperates with the New Mexico Department of State Forestry on such programs as fire control, forest management, and tree planting for the protection and improvement of forestry on State and private lands.

Under the Small Watersheds Act (Public Law 566) the Forest Service has cooperated with the soil conservation districts in controlling floods on watersheds on the Pecos Arroyo project, Santa Fe National Forest, during the past year, and work is continuing on the Upper Rio Penasco project on the Lincoln National Forest, the Frye Creek-Stockton Wash project on the Coronado National Forest, and the Santa Cruz River project on the Santa Fe National Forest. Also, the Forest Service, the U.S. Geological Survey and the New Mexico State engineer are cooperating in the construction of stream gages for the recording of water yield data from 15 small mountain watersheds on the Santa Fe National Forest.

Each year the fire protection program expands to protect more and more private timberlands. During the past fiscal year 1,747,000 acres of State and privately owned lands were protected under cooperative programs. The Forest Service cooperative forest fire prevention program symbolized by "Smokey Bear" has a particular significance in New Mexico. To millions of schoolchildren and their parents the world over, the Lincoln National Forest is renowned as the birthplace of the real Smokey Bear, now in the National Zoological Park in Washington, D.C. His wife "Goldie" is also a New Mexico native, from the Cibola National Forest.

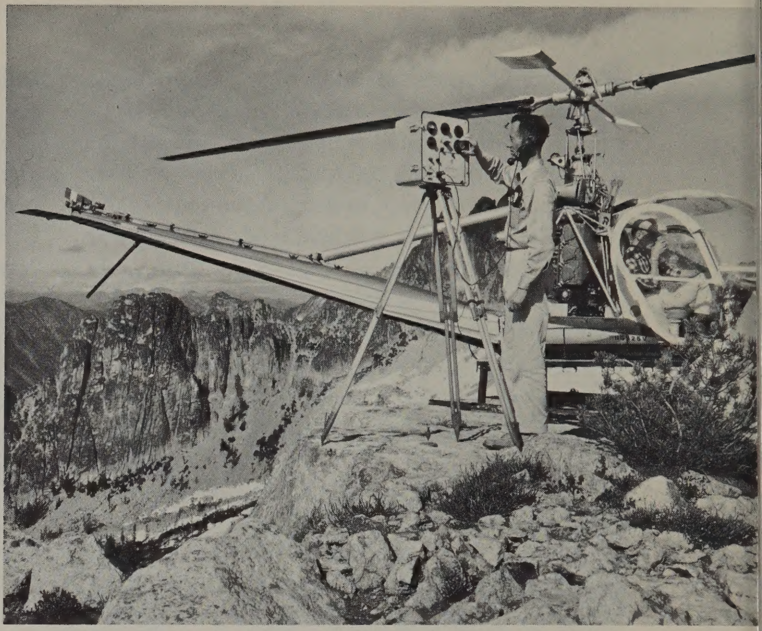
Research

The Forest Service maintains a research center at Albuquerque, one of three field units of the Forest Service Rocky Mountain Forest and Range Experiment Station.

From this center, Forest Service scientists are conducting studies in reforestation, watershed rehabilitation, insect and disease control, and range and wildlife vegetation improvement. At experimental forests in Cloudcroft and in Santa Fe, work is being undertaken on the control of bark bettles, the management of mixed pine and fir, the relation of decay to age in ponderosa pine, and the seeding of rangelands.

Further information on the activities of the Forest Service in New Mexico may be obtained from the Southwestern Region Office U.S. Forest Service, Federal Building, 517 Gold Avenue SW., Albuquerque.

Geological Survey scientists use helicopters and modern equipment to measure distances at high altitudes and on difficult terrain.



Geological Survey

Scientists of the Geological Survey are conducting topographic mapping and more than 40 geologic, geophysical, and geochemical studies in New Mexico. These studies contribute not only to our knowledge of a wide range of mineral and mineral-fuel resources, but also to our knowledge of the composition, structure, and history of the rocks of the State. Topographic mapping in New Mexico is required to meet present-day needs for detailed geologic and mineral investigations, water development and irrigation studies, natural resources development, modern highway projects, industrial development, and urban planning.

A number of the geologic studies are concerned with particular areas known to contain useful minerals, such as the uranium-rich Ambrosia Lake, Grants, and Laguna areas; the potash-bearing Carlsbad area; the central mining district in Grant County; the coal-bearing Raton Basin; and the coal, oil, and gas of the east side of the San Juan Basin. Other studies provide data to aid in planning engineering projects in the upper Gila River basin and at the Gnome test site.

Geologic studies of other selected areas provide regional information and basic data for many uses. Some of these areas include the Guadalupe Mountains, the southern Oscura and northern San Andres Mountains, the Manzano Mountains, the Franklin Mountains and Philmont Boy Scout Ranch. In addition, a map showing the geology of the entire State is nearly ready for publication, with preliminary versions of the map having already been published in four parts. Much detailed geologic mapping done in recent years in the Colorado Plateau is being summarized to better understand the regional geology. Detailed stratigraphic and paleontologic investigations in numerous areas throughout the State support all of these geologic studies.

Geophysical studies in progress include a regional study of gravity, and aeromagnetic data for the Colorado Plateau, magnetic surveys over the Rio Grande Trough, geothermal studies near Grants and Laguna, and seismic investigations extending outward from the Gnome test site.

Geochemical studies of volcanic rocks in the Valles Mountains and associated geologic and geophysical studies have provided better understanding of explosive volcanism and the chemistry and mechanics of formation of volcanic calderas. Information obtained in these studies has been used in defining standards of world-wide significance for explosive volcanic rocks. Other studies are concerned with the crystal chemistry of uranium and vanadium minerals, the environment of formation of uranium and vanadium deposits, the role of organic substances in the geochemical cycle of various elements, and the minor elements present in volcanic rocks.

Information on other geologic work in progress in New Mexico can be obtained from the New Mexico Bureau of Mines and Mineral Resources, at the New Mexico Institute of Mining and Technology in Socorro.

Mapping Activities

One of Geological Survey's objectives in New Mexico is to complete the topographic mapping of the State, concentrating mapping first on those areas having the greatest need, and to maintain the existing maps in useful condition by an adequate revision program.

At the present time over 42,000 square miles or 35 percent of the State is covered by published 7½- and 15-minute topographic quadrangle maps. An additional 28,000 square miles or 23 percent is in progress in the current mapping program in New Mexico. In addition, the entire State is covered by 22 recently compiled 1 : 250,000 scale topographic maps which are useful for regional planning.

In general the long-range plan for topographic mapping in New Mexico calls for the completion of surveys for the unmapped areas of the State within the next 15 years to 1:24,000 scale standards.

Water Resources Investigations

Water resources investigations of the Geological Survey determines and describes the quantity and quality of New Mexico's water, on the surface and underground, whether under natural conditions or under conditions of present or potential development and use by man. Investigations are planned specifically to obtain water information needed to solve major water problems relating to distribution, supply, chemical quality and sediment load, pollution, floods, and variability.

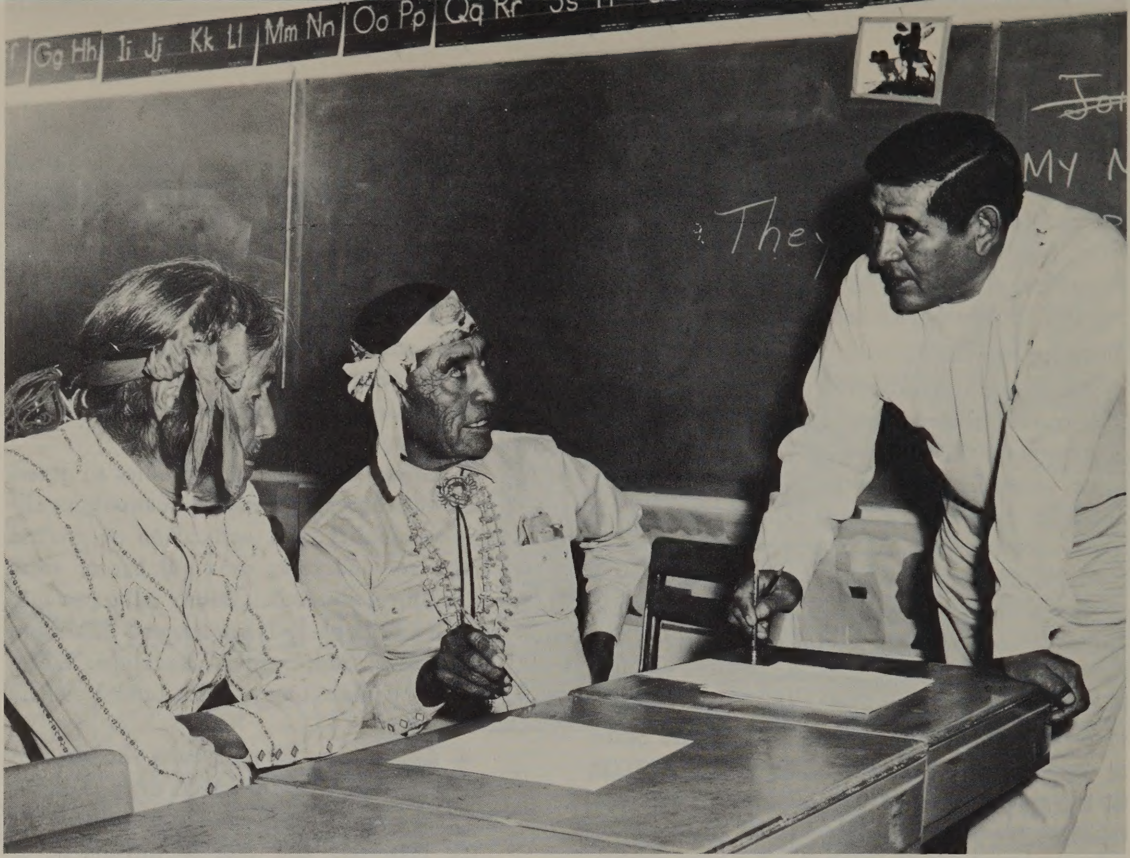
Basic data on streamflow and lake stage are continuously collected at about 188 sites in New Mexico. Basic data on the chemical quality of surface waters and on the sediment load of streams are collected at about 37 sites. Information on ground-water levels are obtained continuously at about 31 wells and periodically at more than 1,700 others.

Significant portions of the program of water-resources investigations in progress include:

1. *Recharge studies on the High Plains.* A study to determine how much water is available, on an annual basis, for artificial recharge to the ground-water aquifers, and to explore possible methods of inducing recharge.
2. *Recharge in the Roswell Basin.* A study of the areal extent and methods by which natural recharge occurs and to evaluate possibilities for artificial recharge in the Roswell artesian basin.
3. *Ground-water studies.* Studies to determine the source, movement, quantity, availability, quality, and utilization of ground water are underway in a number of areas including Columbus, Gallup Albuquerque, Hondo Valley, and Sandia and Manzano Mountains, and Grant, Guadalupe, Eddy, Lea, McKinley, Quay, Luna, and Valencia Counties.
4. *Geohydrology of the Gnome test site.* A study to determine the effects of the Gnome event on the ground-water aquifers and the rock materials and rate of movement of isotopes within the aquifer.
5. *Flood investigations.* Studies to determine the magnitude and frequency of floods on New Mexico streams.
6. *Tritium studies.* An investigation of the use of tritium as a tracer to determine recharge rates and underground movement of water.
7. *Fluvial characteristics and hydraulic variables, Middle Rio Grande.* A study to interpret interrelationships between fluvial characteristics and hydraulic variables in river channels.

Much of the program of water-resources investigations in New Mexico is carried out in cooperation with the State engineer and State and local agencies. The remainder of the funds are directly appropriated to the Survey or transferred by other Federal agencies.

Information on the various geologic and topographic maps, mineral resources maps, water resources reports, and other Geological Survey publications relating to New Mexico can be obtained by writing the Director, Geological Survey, Department of the Interior, Washington 25, D.C.



In Bureau of Indian Affairs adult education classes, many tribal members receive formal schooling for the first time.

Bureau of Indian Affairs

In addition to the resource conservation and development work on Indian lands mentioned earlier, the Bureau of Indian Affairs of the Department of the Interior also assists Indians of the State in other forms of economic development and provides them with community services in the fields of education, welfare, and law enforcement.

Education

The system of Federal-Indian schools operated by the Bureau in New Mexico includes 25 boarding schools (Albuquerque, Santa Fe, Canoncito, and 22 on the Navajo Reservation), 26 day schools (8 Navajo, 18 United Pueblos), and 9 dormitories for public school children.

The Santa Fe Boarding School has been converted for use by the newly established Institute of American Indian Arts, where a comprehensive academic program and elective arts courses in grades 10 through 12 for select Indian art students from all parts of the country will be offered. There will also be a 2-year postgraduate program for advanced studies in this field.

The State of New Mexico has been assuming increased responsibility for the education of its Indian citizens, and Bureau operations have been discontinued on the Jicarilla, Mescalero, and Zuni Reservations, and in several locations in the Navajo and United Pueblos areas. In some instances, the Bureau has continued to operate dormitories for the public school children who are in need of boarding home care.

Adult education programs are conducted by the Bureau in a number of Indian communities in the State. Individual and group instruction, based on the interests and needs of the people, are offered in first aid, improved health practices, safe driving, farm training, use of English, reading, and information on social security and income tax procedures, among other subjects.

Scholarship aid for higher education is provided for their members by the Jicarilla Apache, Laguna, Mescalero, Navajo, and Pojoaque Pueblo groups. A limited amount of aid in the form of grants is available from the Federal Government and from outside organizations. Agency school census reports showed 218 New Mexico Indians attended colleges and universities during a recent school year.

Welfare

The Bureau has a welfare program covering each of the reservations in New Mexico. Social workers are stationed at the United Pueblos, Jicarilla, and Mescalero Agencies and at the subagencies in the New Mexico portion of the Navajo Reservation. The Zuni Reservation is covered by service from the United Pueblos Agency.

General financial assistance is provided to needy Indians on all reservations except Jicarilla. At Jicarilla, there are considerable tribal resources and the tribe itself assists the comparatively small number of needy families. Child welfare services are provided on all reservations including arrangements for the protection and care of dependent or neglected children, planning for adoption, and securing appropriate institutional care for handicapped children through State agencies.

Social services are provided for Indians with family problems or other serious social problems, and advice and counsel are given, when necessary, in planning constructive use of their own and their children's funds. This latter function has been particularly necessary in that part of the Navajo Reservation where there has been substantial individual income from mineral resources.

The State of New Mexico provides surplus food commodities to needy Indians on reservations on the same basis as to needy non-Indians. The State has been especially cooperative with the tribes in this connection.

Law Enforcement

In New Mexico, the State does not have jurisdiction over crimes committed by Indians on the reservations. Most major offenses involving Indians on reservations, as defined by the special or general laws of the United States, are subject to Federal jurisdiction. The great body of lesser offenses by Indians are tried in the local tribal courts. The Bureau assists tribes in their local law-enforcement programs.

Further information on the Indians of New Mexico and activities of the Bureau of Indian Affairs may be obtained from the Area Director, P.O. Box 1060, Gallup, N. Mex., 87301.

Bureau of Land Management

The Bureau of Land Management has jurisdiction over the mineral, range, forest, game, and water resources on the more than 47 million acres of public lands in New Mexico.

The BLM range-management program assures orderly range use and stabilizes the livestock industry dependent on the approximately 14 million acres of national land reserve. Most of the land reserve is suitable primarily for grazing livestock and wildlife and is not forested. However, some 71,000 acres of commercial forest stands and 2 million acres of woodland stands on public lands are supervised by the BLM forestry program. The estimated allowable annual cut is 2 million board feet, which helps support numerous local sawmill operations.

Grazing privileges in the six grazing districts in New Mexico are authorized by licenses and permits which specify numbers and classes of livestock and the seasons of use of the range. A large part of the grazing permits call for

A Bureau of Land Management range manager examines a forage plant on public land used for grazing in New Mexico.

year long use of the range. In calendar year 1961, permits were issued to 4,100 ranchers to graze approximately 270,500 cattle and horses and some 462,000 sheep and goats. In addition, the national land reserve forage supported an estimated 45,000 big game animals throughout the year.

Thousands of big game and countless smaller animals make their homes on the public lands. Like other crops, wildlife needs care and protection. Effects on wildlife habitat must be considered in developing mineral, water, range, and timber programs.

Rich in wildlife resources, the public lands are available for hunting, fishing, and photography.

The BLM State office in Santa Fe is composed of a State director, an administrative assistant, a range and forestry officer with four technical assistants, and a lands and minerals officer with eight or nine land examiners and valuation mining engineers.

The range and forestry staff provides intimate technical guidance and help to the staffs of the district offices composed of 4 to 11 technicians, range managers, range conservationists, agricultural engineers and foresters, on range and forestry functions.

The lands and minerals staff conducts field examinations to determine mineral character of land, validity of mining claims, land suitability leading to classification, appraisals of mineral materials and lands classified for title transfer. In addition, an inventory of Federal lands having better than average recreational value is being developed and maintained to provide the basis for an expanded recreational program presently being developed in cooperation with the State park commission.

The engineering staff conducts official cadastral surveys on lands of the United States to determine property boundaries, maintains a cartographic division, and provides technical guidance to the district managers on all functions having engineering requirements.

The district managers have responsibility for planning and operations involving range-use administration, timber management, fire suppression, soil and moisture conservation and sale of timber and mineral materials.

Two of the six grazing districts are under the administration of one district manager at Las Cruces. Each of the other districts has its own headquarters at Albuquerque, Socorro, Roswell, and Farmington.

The land office is the principal contact of BLM with the general public. It receives and processes all applications for use of the national land reserve and its resources except grazing. It is responsible for the maintenance of all basic land records from early territorial days until the present. In addition, it has custody of Spanish land-grant records dating from early 1600 on which most of the land titles in New Mexico are based.

Mineral leasing accounts for the greatest financial returns from use of the public domain in New Mexico.

Petroleum and natural gas are the biggest industries now using the public domain in New Mexico. Next in importance is potash mining.

While BLM handles the mineral leasing for oil and gas, potassium, phosphate, coal, sodium, and sulfur, the Geological Survey exercises field supervision of production activities in the interest of conservation.

BLM's projects having to do with water resources in the Rio Grande watershed consist of:

(*a*) Construction of detention dams in planned systems to temporarily hold up runoff water and to release it gradually under control, to minimize the damaging effects of erosion.

(*b*) Supplementing proper range management with range pitting, ripping, and sagebrush removal where moisture can most confidently be expected.

(*c*) In addition, in the San Juan watershed, water spreading is part of BLM management and rehabilitation program to reduce soil and water losses and to increase forage production. (The law of the State of New Mexico prohibits the practice of water spreading in the Rio Grande watershed.) Construction of retention dams for livestock water to effect a wider and more uniform distribution of grazing use is a practice in that part of the Farmington District used by Navajo Indians.

Since 1953 BLM has established a two-way VHF radio communications network throughout New Mexico. This has proven an indispensable tool in connection with fire control, in furthering the Bureau's conservation program, and in providing safety for field employees working in remote areas.

Further information on the programs of the Bureau of Land Management may be obtained from the State Office, Greer Building, 113 Washington Avenue, Sante Fe, 87501.

Bureau of Mines

The Department of the Interior's Bureau of Mines serves New Mexico through continuing efforts to advance the development and efficient use of the State's resources of mineral fuels, metals, and nonmetals.

In addition, the Bureau conducts a broad and varied health and safety program within the State, including regular inspections of coal mines, investigations of accidents involving mineral-industry workers, mine rescue work, safety training, collection and publication of statistics on accidents and employment, and control of fires in inactive coal deposits.

The Bureau maintains two installations in New Mexico—the Navajo helium plant near Shiprock, and a mineral resources field office on the campus of the New Mexico Institute of Mining and Technology at Socorro. However,

Bureau of Mines engineers conduct a roof-control study at a uranium mine in McKinley County, N. Mex.

investigations carried on at many other Bureau research centers and laboratories develop knowledge and techniques that can be applied beneficially to mineral resource problems of New Mexico.

Helium Production

Within view of the famous landmark known as Shiprock, the Bureau's Navajo helium plant processes helium-bearing gas from a single well in the Hogback gasfield. The plant, built in 1944, employs approximately 60 persons and has a capacity of 4 million cubic feet of helium per month. The gas processed at Navajo has too low a heating value to be sold for fuel. After its unusually high helium content (5.7 percent) is extracted, the residue—mostly nitrogen—is vented to the atmosphere.

Helium, second lightest of the elements, is a nonflammable, chemically inert gas that liquefies at −452° F., just a few degrees above absolute zero. This unusual combination of properties has made helium—once used primarily in dirigibles and similar craft—essential for many military, industrial, medical, and research purposes. It plays a vital role in many industrial processes, such as shielded-arc welding and leak testing, is used in anesthetic mixtures and as an aid to asthma sufferers, and has important applications in the Nation's nuclear-energy and space-exploration programs.

Mineral-Resource Studies

A comprehensive understanding of New Mexico's mineral resources and the contribution they can make to the Nation's needs is the primary objective of the work conducted at the Bureau's new mineral resources field office, established at Socorro early in 1962.

This office conducts technical and economic studies aimed at expanding mineral development and promoting mineral conservation, cooperates with State agencies in collecting and disseminating information on mineral production, and provides information and guidance to mineral producers and prospectors.

Typical of the varied resource projects conducted by the Bureau in New Mexico is a study of copper-mining methods at the Chino open pit in Grant County, a reconnaissance of selected pegmatite districts in the north central part of the State, surveys of manganese deposits, and investigations of the properties of petroleum produced in the Four Corners area.

Bureau engineers also are evaluating New Mexico's iron-ore resources, and updating reserve estimates and classifying the production potential of copper, lead, and zinc, together with that of coproduct gold and silver. An intensive search is being made for ores of beryllium and its associated metals—columbium, tantalum, cesium, and rubidium—all of which are promising materials for the space age.

Recognizing the essential role of water in mineral processing and the increasing competition for available supplies, the Bureau has undertaken a comprehensive analysis of the quantities, properties, and costs of water required by New Mexico's mineral industries.

Technological Research

At metallurgy research centers throughout the United States, the Bureau performs studies to improve methods of extracting and utilizing metals and nonmetals found in New Mexico. Research now in progress is concerned with such materials as manganese, vanadium, copper, zinc, uranium, gypsum, and barite—all products of New Mexico.

More efficient techniques for recovering, processing, and using petroleum and natural gas, which lead all other New Mexican minerals in value, are being sought by Bureau of Mines scientists at a petroleum research center in Laramie, Wyo. Meanwhile, Bureau coal research at Denver, Colo., is helping to develop broader markets for the wide variety of coals occurring in New Mexico.

Further information on the programs of the Bureau of Mines in New Mexico may be obtained from the Research Division, Bureau of Mines, State Bureau of Mines Building, New Mexico Institute of Mining and Technology, Socorro.

A National Park Service guide points out highlights of the Aztec Ruins National Monument to a group of visitors.

National Park Service

The National Park Service administers Carlsbad Caverns National Park, nine national monuments, and Navajo Reservoir in New Mexico, described earlier in this book.

Under a continuing long-range program of development of areas in the National Park System, the Service is making progress in its improvement plans for New Mexico areas. For example, proposed developments at Elephant Butte and Caballo Reservoirs include roads and parking areas, water-supply and waste-disposal systems, picnic areas, campgrounds, marinas, and swimming beaches. These basic facilities are being built by the Bureau of Reclamation in accordance with recommendations made by the National Park Service. The State Park Commission of New Mexico has expressed an interest in assuming responsibility for operating and maintaining the completed facilities and in expanding the recreation areas as future need arises.

Other Park Service developments in New Mexico include campground development, grounds improvement, sewage-disposal system, and comfort stations at Bandelier; employee residences at Aztec Ruins; visitor center, including exhibits and grounds development, at Capulin Mountain; 1-million-gallon steel water reservoir at Carlsbad Caverns; duplex employee residences at Fort Union; and employee residences at White Sands.

A major road program at Chaco Canyon includes the construction of the entrance road while minor roads-and-trails programs include walks, trails, and driveways at Aztec Ruins; campground road and spurs at Bandelier; visitor center parking area and residence spur road, and walks and drives at Capulin Mountain; walks and driveways at Carlsbad Caverns and Fort Union.

By 1966, park visitors to the State of New Mexico will find many projects completed for public use and enjoyment as well as interpretation of the parks and monuments.

However, the real accomplishments of the Park Service's long-range programs are measured, not by miles of trails, shelters, walks, and driveways, but by how well the program as a whole accomplishes the purpose of national parks—to preserve the Nation's heritage in wild lands, scenery, and historic treasures for the enjoyment and inspiration of Americans.

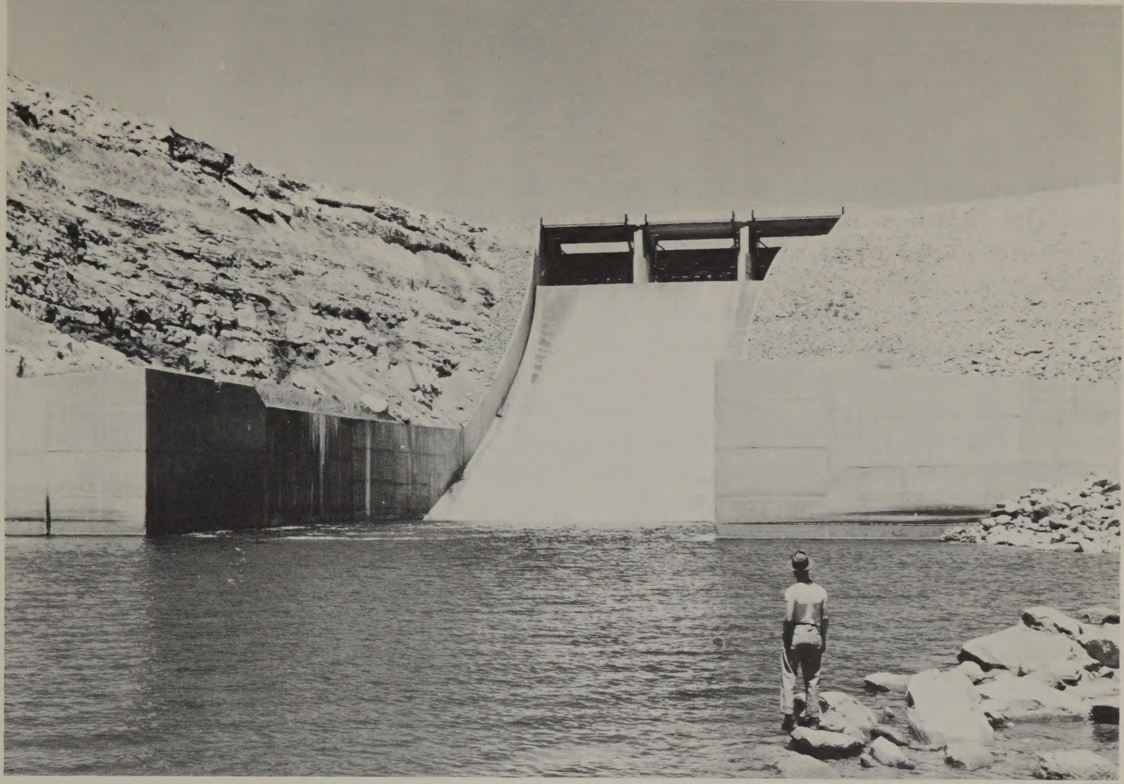
Further information on monuments and parks of the National Park Service system may be obtained from the Southwest Regional Office, P.O. Box 1728, Santa Fe, 87501.

Bureau of Outdoor Recreation

While the Bureau of Outdoor Recreation manages no land, its functions are of significance to the citizens of the State and to tourists because they serve to increase the supply of outdoor recreation opportunities within the State.

The Bureau provides technical services and planning and survey assistance in outdoor recreation to States and local governments. It also assists in preparation of standards for statewide recreation plans and, upon authorization by Congress, will administer Federal financial grants-in-aid for State recreation planning, acquisition, and development.

The Bureau, established in the Department of the Interior by order of Secretary Stewart L. Udall in the spring of 1962, correlates related outdoor recreation programs of the various Federal agencies and bureaus operating in the State; is responsible for formulating a nationwide outdoor recreation policy and plan based on State, regional, and Federal plans; sponsors and conducts recreation research; and encourages interstate and regional cooperation in outdoor recreation projects. It also works on other projects assigned by the Secretary of the Interior and by the President's Cabinet-level Recreation Advisory Council.



Water rushes over a spillway at the Bureau of Reclamation's Alamogordo Dam in the Pecos River basin.

Bureau of Reclamation

There are seven Reclamation projects supplying water to farms in New Mexico. In a recent year these projects provided an irrigation water supply to more than 200,000 acres of land, or about 35 percent of the irrigated farms. The value of the crops grown on these reclamation farms amounted to over $35 million.

In addition to irrigation water, these projects also supply municipal and industrial water, electrical power; provide flood control; and enhance recreational and fish and wildlife resources.

The largest of the Bureau of Reclamation's projects in New Mexico is the fully developed Rio Grande project. It extends from Elephant Butte Reservoir, located in the central part of the State, southward along the river with the New Mexico portion terminating at the New Mexico-Texas State line a short distance above El Paso, Tex. A multipurpose irrigation, power, flood control, and river control project, it provides a full irrigation water supply for about 102,000 acres of land in New Mexico, and assures delivery of water to Mexico as required by the treaty of 1906.

Storage facilities consist of Elephant Butte Reservoir, capacity 2,206,800 acre-feet, and Caballo Reservoir, a reregulating and flood control reservoir some 25 miles downstream, with a capacity of 344,000 acre-feet. The powerplant, the only hydroelectric plant presently operating in New Mexico, has a nameplate capacity of 24,300 kilowatts.

The principal crops grown on lands irrigated by the project's water supply are cotton, alfalfa, vegetables, pecans, and grain.

The second in size is the middle Rio Grande project, authorized in 1950 to rehabilitate the Middle Rio Grande Valley. It extends from Cochiti at the mouth of White Rock Canyon on the north to the backwaters of Elephant Butte Reservoir on the south. The comprehensive plan for the valley, formulated jointly by the Bureau of Reclamation and the Corps of Engineers, provides for irrigation rehabilitation, flood and sediment control, and channel rectification. The irrigation rehabilitation and the channel rectification works were completed in 1962 by the Bureau.

About 121,680 acres of water-right and irrigable land, both Indian and non-Indian, are served by the project works. In the vicinity of Albuquerque, the changing character of the economy from one of agriculture to one in which industry and service trades are dominant, is resulting in the conversion of project lands to rural residences and commercial use.

In areas remote from the metropolitan development, farming, encouraged by an improved water supply and protection from floods, continues at an accelerated rate. The principal crops grown are alfalfa and small grains for livestock feed, and garden crops and fruits for local consumption.

In the Pecos River basin, the Carlsbad project was authorized in 1905 to take over the works of an existing irrigation development that had encountered financial difficulties primarily as a result of damages from floods. The Bureau of Reclamation repaired the damaged structures, improved the distribution system, and in 1937 completed Alamogordo Dam and Reservoir some 225 river miles upstream to provide needed storage.

A total of 25,055 water-right acres are served by the project. Project lands are located immediately below the city of Carlsbad, and extend along the river some 20 miles to the village of Malaga. Principal crops grown are cotton and alfalfa, although small grains and vegetables are also produced. The water supply obtained from the project works is supplemented in parts of the project area by pumping from ground water if necessary.

The Carlsbad project is the major surface-water irrigation area in the Pecos Basin.

Project storage facilities consist of Alamogordo Reservoir, previously mentioned, with a capacity of 122,000 acre-feet; McMillan Reservoir, capacity 32,900 acre-feet; and Avalon Reservoir, capacity 5,100 acre-feet.

The Fort Sumner project, an irrigation district originally established as a private company in 1907, was rehabilitated by the Bureau of Reclamation in 1951. The severe floods of 1941 in the Pecos River washed out a major section of the district's diversion dam, and the irrigators were unable to finance the needed repairs. Rehabilitation consisted of constructing a new diversion dam, lining the more critical sections of the canals, providing new pumping facilities to lift water to the high-line canal, and constructing needed drains.

This project, comprising 6,500 acres, is located on the Pecos River some 15 miles below Alamogordo Reservoir. It has no storage facilities, but gets its water supply by direct diversion.

Principal crops grown on the project consist of feed crops such as grain sorghums, corn, and alfalfa, which are consumed on the farms or sold to neighboring ranchers. Some broomcorn, beans, and truck crops are produced, and the area contains a number of successful small orchards.

The Tucumcari project, which derives its water supply from the Canadian River, is located adjacent to the town of Tucumcari in Quay County, and comprises some 41,400 acres of irrigable land.

Alfalfa hay, alfalfa seed, grain sorghum, cotton, and broomcorn are the principal crops grown.

The Vermejo project is located near the village of Maxwell, along the Vermejo River, and contains about 7,400 acres of irrigable land. Originally constructed by a private company, the irrigation works were rehabilitated by the Bureau of Reclamation and additional irrigation storage was provided. The principal facilities include four small dams and reservoirs with a total capacity of about 26,000 acre-feet, the diversion dams and feeder canals, and the distribution system. Principal crops grown on the Vermejo project are alfalfa, wheat, barley, and oats. The produce is used for livestock feed on the farm or on ranches in the surrounding area.

The Pine River project is located near the town of Durango, Colo. The irrigated lands lie mainly in Colorado, but the project serves over 1,000 acres in the northwestern part of New Mexico in San Juan County. The project was authorized in 1937, and an extension was authorized in 1956 as a participating project of the Colorado River storage project. The principal feature is the Vallecito Dam and Res-

Preparing to build an irrigation structure, these engineers pump water from the ground to dry the foundation.

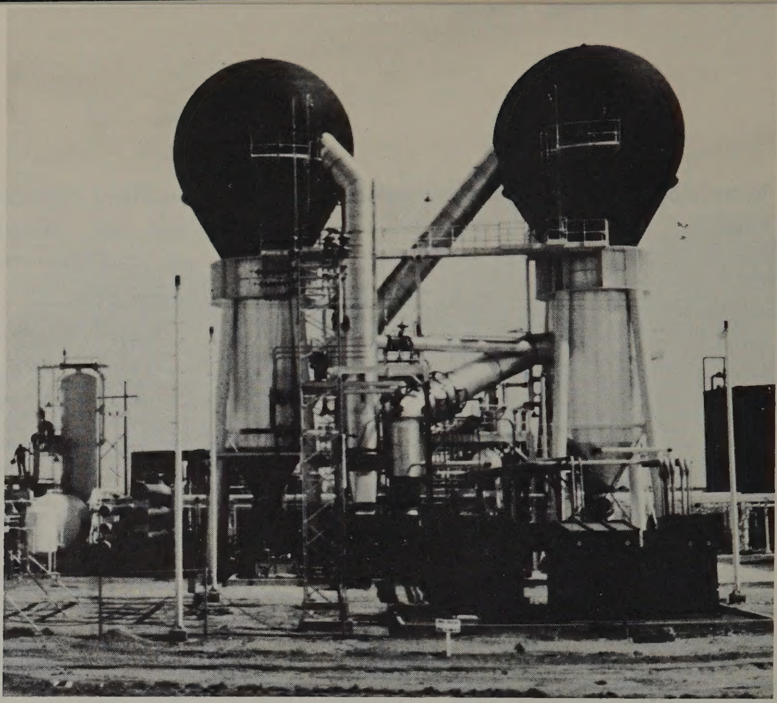
ervoir with an active capacity of 126,300 acre-feet. The principal crops grown are improved pasture, alfalfa, and small grains.

In general, the major areas of surface-water irrigation in New Mexico have been developed or rehabilitated by the Bureau of Reclamation. The projects authorized or being planned are equally important.

The San Juan-Chama and Navajo projects have recently been authorized. These projects will result in development of the major portion of New Mexico's unused water in the San Juan Basin, and provide facilities for future development of the remainder. The San Juan-Chama project will provide supplemental water to 105,000 acres, a full supply for 16,000 acres of new land and 50,000 acre-feet of municipal and industrial water for the city of Albuquerque. The Navajo project, an Indian irrigation project, will serve 110,000 acres of new land.

Other projects currently under study are the Animas-La Plata project which would develop some 15,000 acres of new land in the San Juan Basin, and Brantley Reservoir project in the Pecos River basin which would provide replacement storage for the Carlsbad project, flood protection to the city of Carlsbad, and recreational and wildlife benefits. Smaller projects include the McKnight Reservoir in the Mimbres Basin for irrigation, recreation, and fish and wildlife; the Ojo Caliente Reservoir on Vallecitos Creek in the Rio Grande Basin for the same purposes; and the Tularosa Creek project which would provide municipal water supplies in addition to irrigation, recreation, and fish and wildlife.

Further information on projects of the Bureau of Reclamation in New Mexico may be obtained from Regional Office, Personnel Division, Bureau of Reclamation, P.O. Box 1609, Amarillo, Tex., 79105.



This plant converts a million gallons per day of brackish well-water in the Roswell area.

Office of Saline Water

With one of the largest interests in sound water conservation and development among all Federal agencies, the Department of the Interior through its bureaus and offices is attacking the water problem on many fronts.

The Office of Saline Water—newest agency of the Department to engage in water resource development—was established in 1952. The Office is charged with the responsibility to sponsor, cosponsor, coordinate, and promote research in the field of converting sea and brackish water to fresh—at low cost.

The saline water conversion program differs from other water-development programs in that it offers the promise of developing an entirely new source of fresh water to meet the rising demand for this essential commodity.

Since the Office of Saline Water began its research and development activities, the curve of comparative cost has gone down faster and further than in all previous human history.

During the 1952–61 period, the cost of converted water was reduced from about $4–$5 per thousand gallons to about $1–$1.25. The Office of Saline Water is working on more than 200 different processes in the 5 basic methods of saline water conversion: electrodialysis, distillation, long tube-vertical distillation, forced circulation vapor compression, and others, including freezing.

In 1958, the Department of the Interior's Office of Saline Water was directed by the Congress to build five large (250,000–1,000,000 gallons per day) demonstration plants, with one each on the Atlantic, Pacific, and Gulf coasts, and two in inland brackish water areas.

Saline Water Conversion in New Mexico

New Mexico is cooperating with the Federal Government in the saline water conversion program, and Roswell was selected as the site of a million-gallon-per-day demonstration plant utilizing the forced-circulation vapor-compression system. Under cooperative agreement, the State provided $100,000 toward the cost of construction, and the city of Roswell is purchasing the plant's output for use in its water system. The city also provided the site for the plant, delivers brackish water to the plant, and disposes of plant wastes.

It is inherently expensive to turn a large amount of water into vapor in order to separate it from the dissolved salt. Processes that efficiently use the heat input are necessary, especially in areas of high fuel costs.

In a forced-circulation vapor-compression plant, the saline water is forced up through a tube bundle in an evaporator. A mixture of vapor and hot brine emerge at the top of the tubes. The vapor is pumped off and compressed, thus raising its temperatures. The compression step increases the energy content of the vapor enough for it to be returned to the evaporator to serve as the heating medium. As it condenses it gives up heat in sufficient amount to boil more salt water in the tubes.

Sunshine breaks through a passing rain squall to highlight dramatically the peaks of this mountain landscape.

The Future

New Mexico—the "Land of Enchantment"—is, as you have seen from this booklet, an area rich in natural mineral resources; an area where the hand of man is needed to provide water resources for the development of agricultural lands; an area abundant with fish and wildlife; an area of great scenic beauty and contrasts of mountains and deserts whose recreational potential is only now beginning to be realized.

Conservation and wise use and development of resources of land and water mean sound and continuing progress for New Mexico. The Federal Government has played an important role in furthering New Mexico's growth and progress and this role will be increased and strengthened in the years to come.

Acknowledgments

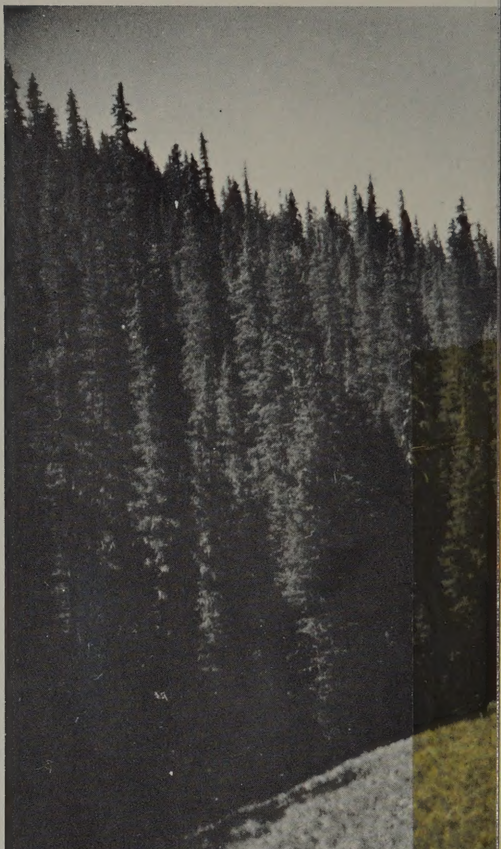
The Department of the Interior is indebted to the following for illustrations appearing on pages as indicated:

U.S. Army Corps of Engineers: p. 48; Forest Service, U.S. Department of Agriculture: inside front and back covers, pp. 27 (upper right), 36, 37 (upper left), 41, 44, 45, 52, 67; Grants Daily Beacon: p. 23 (right); New Mexico Department of Development: front cover, pp. 4, 5 (below), 6 (left), 7, 8, 23 (left), 30, 31 (upper left), 33 (upper left), 34 (right), 35, 37 (upper right), 39; New Mexico State Tourist Bureau: pp. 10 (left), 26; National Geographic Magazine: pp. 5 (top), 10 (right); Roswell Chamber of Commerce: pp. 22, 29.

The Department also gratefully acknowledges the assistance of the Forest Service, U.S. Department of Agriculture, and the U.S. Army Corps of Engineers, Department of Defense, for assisting with the text.

The "Natural Resources of New Mexico" is one of a series of publications on various States. Similar booklets on the States of Washington, Colorado, Montana (each 50 cents), Ohio, Arizona, Massachusetts, West Virginia (each 45 cents) are also for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

U.S. GOVERNMENT PRINTING OFFICE; 1964—O-680-596



For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402 - Price 50 cents

Borrower's

HC
107
/N6
I57

z Natural Resource

Date Loaned	Borrower

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

(Back Cover) Huge Chino copper mine at Santa Rita is the second largest open pit mine in the world.

Bureau of Land Management
Library
Denver Service Center

(Above) A riding party passes through aspens at a height of 10,000 feet in Pecos Wilderness Area.

GREAT SEAL OF THE STATE OF NEW MEXICO · 1912 ·

Created in 1849, the Department of the Interior—a Department of Conservation—is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

March 3, 1849